

THE HOME-LIFE OF
THE TERNS
OR SEA-SWALLOWS

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THE HOME-LIFE OF THE
TERNs OR SEA-SWALLOWS

THE HOME-LIFE

OF THE

TERNS

OR

SEA SWALLOWS

PHOTOGRAPHED AND DESCRIBED

BY

W. BICKERTON, F.Z.S., M.B.O.U.

Vice-President of The Hertfordshire Natural History Society and Field Club.

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TO
THE LADY EBURY

TO WHOSE
KINDLY INTEREST AND SYMPATHETIC ASSISTANCE

I OWE
SO MANY OF MY BIRD PLEASURES
I GRATEFULLY INSCRIBE THIS BOOK.

29.10.1894

29.10.1894

PREFATORY NOTE.

I DESIRE to acknowledge my indebtedness and to express my thanks to the many helpers and friends who have so generously facilitated the studies which make up this book. Chief among these are The Right Hon. Lord Muncaster (Muncaster Castle), The Elder Brethren of Trinity House, Mr. Alexander Watt, J.P., Mr. George Watt (Ravenglass), Mr. W. M. Birkett (Muncaster), Mr. Philip Thomas (Neath), and Mr. John Parry.

Mr. C. Oldham, F.Z.S., has very kindly read through the proofs, and to him, as also to Mr. H. F. Witherby, I am under obligations for valuable suggestions and criticism.

Portions of Chapters II., III., and IV. appeared several years ago in *Country Life*, and to the Editor of that journal I am indebted for his courteous permission to reproduce these. The remaining chapters have not been previously published ; indeed I venture to hope that Chapter V. contains some new information with regard to the nesting haunts and habits of the Roseate Tern, as the photographs which illustrate it are, I believe, the first of this rare and interesting bird that have ever been taken or published in the British Isles.

W. BICKERTON.

WATFORD,

August, 1912.

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THE HOME-LIFE OF THE TERNS,

CHAPTER I.

INTRODUCTORY.

FIVE species of the beautiful and interesting family of Terns or Sea-Swallows visit the British Isles every summer for their nesting season, returning to the more genial climes of the south again in early autumn; and although these all belong to the same genus (*Sterna*), and do not, unfortunately, include any of the marsh-haunting species,* they nevertheless form a most fascinating group of birds—well worthy of specialised study as a group and as individual species.

It would ordinarily be expected that in any natural group of closely-related birds there would be many and striking proofs of the family relationships, but it may well be doubted whether our whole British list contains another group of five birds belonging to any one genus, which present among themselves more close and obvious resemblances, both in general appearance and in habits and characteristics, than do our species of nesting Terns. None of the five, for instance, shows any conspicuous departure from the general colour-scheme of the genus, viz. black cap, grey mantle and wings, and white or pearl-grey under-parts; while all agree

* One of these, the Black Tern, is a bird of regular spring and autumn passage through the British area, though it does not now remain to breed. It is recorded annually even in an inland county like Hertfordshire. The species formerly nested in several parts of Great Britain, but the last recorded eggs were taken in Norfolk in 1858.

in having long, pointed wings, forked tails and short legs, and in exhibiting a manner of flight which is at once so easy, buoyant and graceful as to render it quite distinctive even among sea-fowl. All again (so far as the British Isles are concerned) are summer visitors only; all are gregarious, though in differing degrees; generally speaking, all show a marked preference for insular and marine, rather than for inland or freshwater habitats. All nest on the ground, choosing sites on the bare sand (whether of the gently-sloping shore or the higher sand-dunes), the shingle, the short grass, or the bare or lichen-grown rocks, according to circumstances. None of the species, again, displays much predilection or aptitude for nest-building; the "homes" they prefer are at best mere *collections of material* rather than definitely-arranged *structures*, and are far more rudimentary in type than the larger and more shapely and orderly nests built by their nearest relations the Gulls. The eggs again—differences in size of course excepted—show marked similarity both as regards number (one to three), shape, ground-colour and markings. All our Terns are characterised by call- or alarm-notes having a somewhat similar harsh or grating quality; while all pursue the same general method of obtaining their food, viz. by actually plunging down from a height into the water in order to capture their living prey.

But while the strong natural resemblances here indicated are of interest as epitomizing the common ancestry and common descent of the various species, there are many striking points of differentiation among them; and these, detailed and trivial though some of them may be, are just as natural, and possibly of greater interest as showing in what directions the separate members of the group have specialised, i.e. developed those distinctive characteristics of structure and habit whose sum-total has sufficed to mark off their possessors as species.

Indeed, from this point of view of variation within the genus, the five species may be arranged in a threefold

division. In the first place there would stand the Sandwich Tern alone, a species which is so clearly differentiated from its four congeners that it could not easily be confused with any of them, even by a beginner in field-ornithology. Its large size, its extreme activity, its powerful flight, its call-note, the character of its nesting-sites, the "close gregariousness" of the birds at those sites, the size and beauty of its eggs, the features of the nests, the larger size of the young on hatching, to say nothing of such minor details as the dark colour of its bill, legs, and feet, are all so characteristic as to be quite decisive.

At the other end of the scale stands the Lesser Tern, sharply marked off from its relatives by equally distinctive characters. Its small size (it is the baby member of the group), the character of the haunts it prefers, the degree of remoteness or isolation from other birds which it exhibits at nesting-time, its comparative lack of sociability even for birds of its own kind, the characters of nesting-site, nest, and eggs, the white crescentic band of feathers on the forehead of the adult in the nesting season, together with its yellowish or horn-coloured bill and legs, make up a list of distinctions which again are quite decisive, and for the most part readily recognized.

Between the largest and the smallest of the five as just described, may be placed in one central group, the three remaining species, viz. the Roseate, the Arctic, and the Common Terns; for of these, as individual species, no such obvious schedule of identification, at all events for the field-naturalist, could be prepared. Indeed, were it not for their differing and characteristic call-notes, it would be extremely difficult, if not impossible, to identify the birds when all are on the wing together in a mixed multitude—a statement which applies particularly to the two better-known of these species, viz. the Arctic and the Common Terns. Messrs. Buckley and Harvie-Brown, for instance, state*: "In writing about the Terns of Orkney the same difficulty exists

* "Fauna of the Orkney Islands," p. 226.

here as elsewhere, viz. the almost impossibility of distinguishing the Common and Arctic Terns on the wing, or at even a short distance, unless by anyone who has made these birds quite a speciality." Again, Mr. Seton P. Gordon writes :* "The Common and Arctic Terns are practically indistinguishable while on the wing, and there is so very little difference between them, that they can scarcely, I venture to assert, be quite a distinctive species." It could safely be urged, indeed, that with these three species, variation as an active force within the genus has only found very limited expression; and that, just as all five species of Terns have apparently sprung from a common stock, so within that group the three species now under consideration must have had a common precursor. (I speak from the point of view of the field-naturalist rather than that of the anatomist). All three species, for instance, are—save for slight differences in the length of the tail-feathers—almost exactly equal in size, the variation in the colour of their plumage is merely a matter of "shades," they may, and sometimes do, occupy the same limited nesting-area, though they do not in my experience intermingle promiscuously in that area; the eggs of all three exhibit such remarkable approximation both in size (they only differ by tenths of an inch), ground-colour and markings, that were all three kinds placed together irregularly and in some numbers, it would, in my opinion, be practically impossible to separate them correctly. In all three species, again, nest-making of a rudimentary type is practised by some individuals, yet avoided by many others in the same colony. The legs and feet of all three species are red; in the Arctic Tern the bill also is red, while in the Roseate and the Common it is partly red and partly black (or at least dark-coloured) though in differing degrees in the two species. The Roseate Tern, it is true, is distinguished by the pale roseate blush on its breast, though this is so faint that I could never discern it save through the

* "Birds of the Loch and Mountain," p. 107.

field-glasses, or when the bird was at rest and only a few feet distant. And the Arctic Tern is distinguished by a deeper shade of grey, especially underneath, as compared with the white under-parts of the Common Tern. There are differences again, in the length of the legs (tarsi) as also in that of the tail-feathers; though as has been already insisted, such differences are so slight as to be practically impossible of recognition when the birds are on the wing.

But there are other points of view, some natural, some arbitrary, from which the five species of Terns may be regarded and arranged. The textbooks, for instance, usually classify them according to their "natural" order, and describe their life-histories successively in that order, viz. Sandwich, Roseate, Common, Arctic, and Lesser. This sequence, as it happens, almost coincides with the arrangement according to size, the Sandwich being 16 inches in length, and the Roseate, Common, Arctic, and Lesser being 15.5 in., 14.25, 14.5 and 9.5 in. respectively. Placed according to their order of arrival on the spring migration, they would probably be (*a*) Sandwich Tern—end of March; (*b*) Arctic and Common—latter half of April; (*c*) Roseate—very end of April, and (*d*) Lesser—early in May. Strangely enough, this sequence does not coincide with that in which nesting commences, for according to my experience the Sandwich Tern nests first, then the Lesser, and later the Arctic, followed closely by the Roseate and the Common. Regarded again from the point of view of abundance or rarity in the British area, the Arctic easily outstrips all the others both numerically and in range of distribution. The Common Tern also is very numerous, the Lesser Tern less so, while the Sandwich Tern is decidedly rare, and the Roseate extremely so, being indeed one of the rarest of our British breeding birds.

As it is the object of the present comparative study of our native Terns to try and depict each species in its home-life and surroundings, and in so doing to indicate, and as far

as possible to emphasise, the points of interest and of difference peculiar to each, I do not propose to adopt any one of the arrangements just briefly passed in review ; but in the endeavour to ensure that this little book shall live up to its title, to deal with the various species in the order in which I found and photographed them in the field. To be precise, I have studied the Terns in two localities only. In the first of these (Ravenglass) I found the Sandwich Terns, Common Terns, and Lesser Terns nesting ; in the second (which for the sake of protecting the Roseate Tern I do not propose to indicate) I had been led to expect the Roseate and the Arctic Terns. This expectation was, happily, realised, and in addition I had the pleasure of discovering a large colony of Common Terns, and was therefore able to compare the conditions of the home-life of this species in two localities which were not only far removed from each other, but of totally different character ; the one insular, the other on the mainland seaboard ; the one a severely restricted area of rugged rocks, the other a widely extended stretch of shifting sand-hills.

It would be presumption to claim either that a week's study of a single species in a single area, or a more prolonged study of several species in only one of their nesting-haunts, would enable any observer to give a complete account of their domestic economy, and it is in no such spirit that this little record is published. All it claims to be is the simple holiday study, fragmentary rather than exhaustive, of an amateur naturalist who has found real delight and relaxation in trying to watch faithfully and to record accurately both with pen and camera, the doings of a little group of birds whose fascination to him has been supreme.

CHAPTER II.

THE SANDWICH TERN.

So far as I am aware there are at the present time only two localities south of the Tweed in which colonies of this largest of our British Terns can be found at home; one of these being on the east coast at the Farne Islands, and the other about one degree of latitude further south and on the west coast near Ravenglass in Cumberland*. It is in the second of these its two chief English haunts that my observations on the Sandwich Tern have been made and my photographs of it obtained, and perhaps therefore, a few words by way of general description may enable the reader to realise more vividly the character of the conditions under which the domestic life of the birds is passed.

Let me say, *en passant*, that I have been able to spend five separate holiday weeks in studying the Terns and Gulls which nest in such numbers at Ravenglass: viz. one week in 1905, one in 1906, two in 1907, and one in 1912. Four of these weeks (one in each of the years mentioned) have, perforce, included the last few days of May and the first few days in June; my second week in 1907 included the last few days of June and the first few of July—a time at which the nesting of the Sandwich Tern is practically completed for the year.

Ravenglass itself is a tiny, grey, cheerless-looking village, consisting of a single old-time street which has grown up (it looks rather as though it had been dropped down from above and had been well shaken-up by the concussion) near the confluence of three little Lakeland rivers—the Irt, the Mite, and the Esk. These, coming down from the western

* Since the above was written Mr. H. W. Robinson has reported (See *British Birds*, August, 1912,) that during 1911 and 1912 a smaller colony has re-established itself on Walney Island in Lancashire.

Cumbrian fells, unite here to form an estuary ; and this, broadening out through a wide breach in the coast-line, finally enters the Irish Sea some eight or ten miles south from St. Bees Head. Both north and south from this estuary broad masses of ever-changing sand-dunes have been blown, barrier-like, into existence by the strong westerly winds, and these form the most noticeable feature in the coast scenery here. To the north, the masses of broken sand-hills, line within line, stretch away from Drigg Point towards the villages of Drigg and Seascale, and it is in this direction that the great haunt of nesting sea-fowl known as "The Gullery" extends. Black-headed Gulls in countless thousands and vocal almost to distraction form the predominating species, but the more interesting Terns—Sandwich, Common, and Lesser—also nest (the two former, happily, in increasing numbers) on and around the area, as also do, *inter alia*, the Oyster-catcher, the Ringed Plover, and the Sheld-Duck.

This northerly area of sand-hills is roughly triangular in shape : its western edge forms the sea-front ; its narrower southern, curving base abuts on the estuary mentioned, while its eastern fringe, after running up by the tidal waters of the Irt bends off coastwise, and is succeeded on the landward side by an area of rough grass-land and dyke-tracked marsh, the home of Peewit, Redshank and Snipe. The portion of this rugged district occupied by the gullery is about two miles in length with an average width of perhaps half a mile, the total area appropriated by the birds being at least five to six hundred acres. It is an unusual district in many ways. The sand-hills themselves, though their contour is ever changing, reach their highest elevation (some 60-70 feet) on the sea-front, where, too, there is more "character" in the individual dunes, and where also they are but scantily clothed with the characteristic marram grass of the district. As they recede inland they become smaller, and melt into less conspicuous and more evenly shaped masses, becoming also more consolidated

in character. Here and there among these rolling waves and broken masses of sand-hills are deep, quiet rounded recesses, sometimes of large and sometimes of small extent, and these frequently consist of stretches of shingle and gravel—tiny deserts of stones set amid the surrounding desert of sand, yet beloved withal as nesting-haunts by the wily and secretive Oyster-catcher and the equally “slim” Ringed Plover. In other cases these sheltered recesses, sunk below the level of the surrounding dunes, are, strange to say, covered with a carpet of softest and springiest vegetation frequently gay with flowers, and upon which—especially after a long day’s tramp about the loose and shifting sand—it is a joy not less than a relief both to look and to tread.

Now it is up and down the whole of this nesting-area that the colonies of Sandwich Terns are scattered, the most northerly group being (in June 1912) at least a mile and a half away from the most southerly group, though several other nesting parties were located about the intervening distance. For the Sandwich Terns, though essentially gregarious in habit, do not choose to nest all together in one particular spot nor in one continuous area. Rather they prefer to break themselves up into a number of separate, self-contained sub-colonies, each of which selects a different area on the sand-hills as its own little branch of the “ternery.” It is possible that, to some extent, these separate batches of birds may represent successive contingents as they arrive on migration earlier in the season; for certain it is that while in some of the sub-colonies all, and in others only a portion of the eggs may have hatched out on a particular date, others may be noted in which not a single egg shows signs of chipping, and others again where the layings are obviously incomplete, most of the eggs looking perfectly clean and newly-laid. And the members of the various sub-colonies differ greatly in the degree of sociability they display, for while in some cases the numbers are as few as six or eight pairs, in others they may include fifty or sixty pairs. Again, while one sub-colony will mark out its nesting

pitch only a dozen yards away from an adjacent sister-colony, another group is apparently satisfied with nothing less than a distance of half a mile between itself and its nearest neighbour. One sub-colony again, will locate itself on the highest wind-swept plateau of all but bare sand, right on the front sea-line of hills : another will choose a more sheltered and remote spot inland—now on the winding ridge, and now on the gently sloping side of a line of rounded dunes, where perchance the coarse marram grass grows thick and tall—so much so indeed in some cases, as almost to conceal in its waving, grey-green masses the close-grouped birds that are settled on their nests.

Some of the points in the nesting economy of the birds here mentioned are well illustrated in my first two photographs. Plate 1 includes a group of nine nests on a sandy site, though two of these nests are scarcely visible through the patch of grass in the right-hand top corner. In each case the nest is seen to be merely the shallowest of saucer-shaped depressions in the bare sand, and without lining material or structure of any kind. By way of contrast, Plate 2 shows a larger nesting-colony, most of the birds having settled down on their nests in the long grass. (The larger bird in the left foreground is a Black-headed Gull, as also are most of those out of focus in the background).

But some of these same features in the life-history of the birds may also be effectively illustrated by an extract from my notebook of 1906, the details of which were taken down on the spot as the nests were found. On June 1st of that year I came across two groups of nesting Terns. The first included eleven nests containing fourteen eggs, but not a single young bird. In the second group there were sixty-two nests, containing in all ninety-six eggs and young—sixty eggs and thirty-six young birds. On June 4th I came across two other groups of nesting birds, the first one including fourteen nests with twenty-two eggs, not one of which showed signs of hatching, and the second one numbering seventeen nests with thirty eggs or young birds—

viz. fourteen eggs and sixteen young. Summarized in Table form these are as follows :—

	No. of Nests.	Eggs.	Young.	Total.
Group I.	11	14	—	14
„ II.	62	60	36	96
„ III.	14	22	—	22
„ IV.	17	14	16	30
	<hr/> 104	<hr/> 110	<hr/> 52	<hr/> 162

I do not wish it to be inferred that the four groups of birds included in this summary were the only ones to be found in the nesting-area in that year. As a matter of fact they were not, but they were all that I chanced to come across in my week's wanderings about the sand-hills.

It should be stated that during the nesting-season a keeper is specially employed to exercise watch and ward over this great bird-nursery, and that it is his especial function to extend the ægis of protection as rigorously and as systematically as possible over the nests and eggs of the Sandwich Terns.

Fortunately this intelligent “Warden of the Hills” has made a practice of recording in his notebook the particulars of the eggs he finds year by year in each of the Tern colonies, and the following figures taken for 1912 show that there were eleven different groups of various sizes, and containing an aggregate of 403 eggs :—

SANDWICH TERNS, 1912.

Colony I.	23 eggs.
„ II.	24 „
„ III.	12 „
„ IV.	65 „
„ V.	71 „
„ VI.	8 „
„ VII.	86 „
„ VIII.	16 „
„ IX.	34 „
„ X.	48 „
„ XI.	16 „

403 eggs.

There are several points of striking interest about the nests and eggs of this species which cannot fail to impress themselves upon the most casual observer. In no other species of Tern, for instance, are the nests as a rule so closely placed on the area chosen, and while in many cases they are on an open space of bare sand which affords the individual nests no protection, the location most generally favoured is a patch of sand immediately adjacent to, or even encircled by, a growth of marram grass which forms a natural screen or shelter.

Another feature of the nesting-sites, and one that is also quite peculiar to the Sandwich Terns, is the extraordinary habit the birds have of excreting their liquid fæces in the immediate proximity of the nests. Whether this insanitary habit finds expression while the birds are standing casually on the ground near the eggs, or whether it is practised systematically by the incubating birds I cannot say for certain, but I am strongly inclined to the second alternative. In either case, it is a fairly obvious deduction that the condition of the immediate surroundings of the nest is roughly a test of the age of the eggs, or the length of the period since incubation commenced. Where the nests are obviously new and the eggs freshly laid, the surroundings are perfectly clean; with older nests the sand beyond is bespattered with whitish fluid excreta, deposited in lines or splashes which generally speaking, radiate outwards from the nest as a centre. When the young are hatched out, nests may be seen completely encircled by this unsavoury deposit, as though the sitting bird had during the period of incubation made a complete rotation of the nest and had voided the fæces in every direction in turn. As I have said, it is a very extraordinary habit for a Tern, and one that in my experience finds no parallel in any other member of the group. Evidence of the habit is readily discerned in Plate 1, where the nest on the right, though containing only one egg, is apparently the "oldest" of the group and again in Plates 4 and 5*b*.

An examination of the so-called nests will show that in the majority of cases these are absolutely structureless : that it is indeed exceptional to come across any real collection of material, or even any lining, however scanty, to the nesting hollow. In some cases where the nests were placed in a distinctly grassy area, the birds had bent down or twisted (though without plucking them) the long narrow grass stems into a loose kind of rim around the nest, though the actual bed of the nest within this rim consisted simply of the uncovered sand—a feature which is illustrated by the nest in Plate 7. In only one instance out of many hundreds have I seen a real nest of the Sandwich Tern, i.e. material for a nest collected, deposited, and to some extent compacted in the nesting-hollow, and the eggs laid upon this. This very exceptional nest consisted of a platform of dried grass stems which was of considerable thickness, and was placed near the centre of one of the colonies.

The eggs of the Sandwich Tern are of outstanding beauty and interest. They are not only the largest, but they seem to me to be larger in proportion to the size of the bird than those of any other species, the Lesser Tern alone excepted. Whether this has any connexion with the fact that they are laid earlier in the season and so under less favourable climatic conditions than those of the other species, or whether the natural inference actually follows from this, viz. that the young having been provided with a larger amount of food during the pre-natal development, would be able to leave the nest more quickly than those of other species, I am not prepared to affirm.

The eggs also, are extremely beautiful; for excepting those of the Razorbill and the Guillemot, I cannot recall any eggs whether of sea- or shore-birds that surpass them in this respect. They have, indeed, in a high degree, the double requisite for a really beautiful egg, for the ground-colour is at once fine, clear and light-toned, and therefore well adapted for setting off to fullest advantage the bold

and richly-coloured markings which, now in streaks or splashes, now in blotches, zones, or masses, or sometimes in a confusing intermixture of all these, combine to make the eggs such conspicuously handsome ones. The ground-colour varies between two well-marked types, though with many intermediate shades. At one extreme there is an almost pure white; at the other an egg whose dominant colour is a rich creamy-buff, passing in exceptional cases into a deep though clear brown tone. Eggs that are not well marked are decidedly in the minority, though it may be noted that Plate I includes one pair of eggs almost pure white in ground colour, and with scarcely a surface-marking upon them. These are very exceptional.

It goes without saying that the eggs of any bird which are at once so beautiful and so comparatively rare, are highly prized and eagerly sought after by the dealers in and collectors of such commodities. The Gullery at Ravensglass is, fortunately, strictly protected by its owner, Lord Muncaster, to whose large-hearted generosity alone is due (as in so many other instances) the continued existence in this area of one of our rarer British birds. No person is allowed to visit the birds without having previously obtained from the Estate Office a written permission to do so, and to this permission there is always attached the condition that no eggs, and particularly no eggs of the Sandwich Tern shall be taken away. Yet despite these precautions, more than one case has been known in recent years where honour has been forgotten and confidence grossly abused: surreptitious visits have been paid under cover of the darkness to the Terns' nests, and the eggs from whole colonies taken away. Unfortunately, it is not always the mere greedy collector who is responsible for wholesale depredation of this kind. For in one of our standard works on British birds it is set forth that the author (one of the most eminent scientific ornithologists of his day) in order to "show the riches of the district" and on the occasion of a visit to the Farne Islands on June

19th, 1870, took away with him no less than 456 eggs of various species, the schedule of which he duly sets forth in his book. At the head of the list stands the Sandwich Tern, 149 of whose eggs were taken! the author naïvely confessing that he "only took exceptionally handsome eggs," and that after he had made his selection "the numbers left in the nests were not perceptibly lessened"! While it is true that 1870 is far removed from 1912, it is equally true that it was wholesale robbery of this kind which nearly caused the extinction of this and other rare species, and which, fortunately, called into timely existence the Society which now exercises watch and ward over the sea-birds nesting on the Farnes.

At Ravensglass too, sterner measures have perforce had to be adopted not only to prevent as far as possible future raids on the Terns' eggs, but also to render the eggs absolutely worthless as collectors' specimens. On his daily rounds the keeper now takes up every freshly-laid egg of the Sandwich Terns, wets the surface of the shell, and then with indelible violet copying pencil writes the word "Ravenglass" in a good round hand so as to encircle the belly of the egg, afterwards marking the two ends, thus rendering each egg unsightly and therefore useless as a cabinet specimen. This simple device has proved exceedingly effective since it has been put into practice.

Unfortunately for the Sandwich Terns, however, the human marauder is not their only enemy at Ravensglass. I have mentioned that the whole nesting-area is practically under the domination of an enormous colony of Black-headed Gulls at least 100,000 in number, and a complete perambulation of whose nesting-areas would probably involve a circular, or rather an elliptical tour of something like five or six miles. I have mentioned also that the Sandwich Terns nest in separate colonies or sub-colonies which are scattered all over the gullery, so that in almost every instance the smaller groups of nesting Terns are completely surrounded by, and immersed in,

the larger groups of Gulls, the nests of the two species occasionally being, on the fringe of the Tern colonies, quite close to each other. This is well illustrated in Plate 3, where Gull and Tern are at their nests almost side by side. This photograph was one of a series taken in 1907, and it further illustrates the fact that the Tern, comparatively fearless and confident in spite of the rather large hiding-contrivance (a crate drawn with evergreens) which was placed only a few feet from her nest, has returned and settled down to her duties of incubation; while the Gull, suspicious and querulous as to the meaning of the object and of the vague noises that from time to time issued from its interior, still stands up in her nest hesitating and uncertain. This incident, indeed, illustrates what was at that time a general difference of habit between the two species, viz. that the Terns as a class were bolder and more confident in returning to their nests than the Gulls were, a result which was probably one, if not the chief, reason why the eggs of the Terns appeared to suffer no diminution or damage from being in such close proximity to those of the Gulls. During my first three visits (1905, 1906 and 1907) indeed, I had not noticed (nor had the keeper) a single instance of molestation of this kind, but during my last visit (June 1912) it was only too apparent that the Gulls had developed aggressive tendencies towards the Terns, and had acquired a taste for their eggs. Where the nesting-areas of the two species were coterminous, the Gulls now were always the first to come back to the nesting-quarters after being disturbed, and they then persistently took advantage of the absence of the Terns to attack and destroy their eggs. Sometimes they appeared to be content with stabbing the Terns' eggs with their bills; in other cases they devoured the contents as well.

From one point of view the presence of the Gulls doubtless affords some measure of protection to the Terns, for the former are there in such countless thousands, that not only do they securely mask the existence of the small parties of

the rarer birds among them to the casual visitor, but they also make it far from easy even for the expert to locate all their nesting-colonies. But the recently developed taste of the Gulls for the eggs of the Terns has introduced a new and serious factor into the struggle of the latter for the continued existence of their species, and one which, if allowed to develop unchecked, may be followed with the gravest results. As some measure of relief to the Terns, I suggested to those in authority that around each of their colonies a neutral zone of some 20 or 30 yards should be entirely cleared of the nests and the presence of the Gulls, so that the former should have a more hopeful chance of bringing off their young. The experiment was tried forthwith, and showed favourable results even within the week over which my visit extended. But the difficulty though it may be minimized, will not be removed entirely in this way, for the young Gulls, many of which are hatched out some time before the young Terns, at once begin to wander away from their nests. It is impossible to prevent some of them from wandering into the ternery, and as, naturally, they are followed up by their parents with supplies of food, the Terns cannot be entirely relieved of the presence of their now voracious neighbours.

Before leaving entirely the comparison between Gull and Tern, one word more may be said with reference to Plate 3. This instructive photograph serves to record, not only the difference in size between the Black-headed Gull and the largest of our Terns, and the differing degrees of confidence they then exhibited, but it serves also to show the characteristic difference between the so-called "black heads" of the two species. In the Gull the dark feathers are seen to extend all round the head—above, below, and at the sides—forming indeed a veritable hood; whereas in the Tern they form only a cap as distinct from this. In the Gull, too, they are really dark brown; in the Tern they are almost jet black; and in the Sandwich Tern the black feathers are longer and more loosely arranged

downwards and backwards; so much so indeed, that the bird to a much larger extent than any other Tern, can and actually does, use them as the equivalent of a crest which it can erect and withdraw at will. Only—if indeed it be not a contradiction of terms—it is a crest which is placed at the back of the head instead of on the top, and which is erected downwards and outwards rather than upwards and forwards, as in the case, for instance, of the Great Crested Grebe. And the birds do frequently erect these rudimentary crests, especially when they are excited or alarmed, or in militant mood, and in nearly every instance when they alight near their nests after being disturbed.

On page 23 I have given a table showing the various sizes of four groups of the Sandwich Terns and their differing conditions with regard to the state of incubation. Just one point may be made here as to the number of eggs to the clutch. I noted down in these four groups the number of eggs or young contained in each nest and the result is summarized herewith :—

	Nests containing one each,	Nests containing two each,	Total number of eggs or young.
Group I.	8	3	14
„ II.	28	34	96
„ III.	6	8	22
„ IV.	4	13	30
	—	—	—
	46	58	162

I may add that I have examined many hundreds of nests of the Sandwich Tern, and that I have never yet seen one which contained more than two eggs or young birds.

The young Terns as they hatch out of the eggs—Plate 5*a* shows a young bird which, just emerging, has, for the moment, exhausted its strength in its struggle to extricate itself—lie prostrate and helpless in the nesting-hollows until their down is dry and they have gained in strength, as shown in Plate 5*b*. Sometimes within a

few hours, however, they begin to move slowly away from the nest, and generally to creep in among the bents of the marram grass, where they are not particularly easy to discern, and where their mottled coloration assists materially in rendering them inconspicuous. On the other hand they sometimes creep along the bare sand for considerable distances, avoiding the grassy situations altogether, and I have found them as much as twelve or fifteen yards away from the nest in such surroundings and before they were at most two days old. They appear to move, in this early stage, very slowly indeed, and to be continually assisted by their parents; they are, in fact, quite incapable of running away from the nest as the young Ringed Plover, for instance, can so rapidly do.

In other instances, however, I have known them to remain in the nest until the third day after hatching, especially when the second chick was later in coming out. During these early days the parent birds spend most of their time in brooding the chicks, following them up in their wanderings, and never seeming to try and coax them back to the nest as I have seen Arctic Terns do. Though on several occasions I watched long and carefully, I was never fortunate enough to see one fed by the parent.

When the young birds are a few days old they seem to disappear completely from the nesting-sites, and it is then—in my experience—almost impossible to discover them on such a widely-extended nursery, where concealment is so easy. I wished, for instance, to find some young birds about a week or ten days old, both in order to see what they were like, and also to try and photograph them; yet though I searched diligently and repeatedly for a considerable distance round the nesting-areas, I never succeeded in finding a single bird. On this point, however, I should like to quote my friend, Mr. C. Oldham, who writes*: “At a later stage of growth a narrow bed is excavated, wherein the young bird (Sandwich Tern) crouches with its back

* “Zoologist,” May, 1908.

below the level of the sand. On June 21st, I found two young birds not quite able to fly, but with the frosty grey primaries well developed. They were crouching some five or six yards apart, each in a little bed like a rabbit-scratching into which its body exactly fitted, its back being below the level of the surrounding sand. At a distance of a few yards it was almost impossible to distinguish them from their surroundings."

An examination of a series of newly-hatched chicks of the Sandwich Tern discloses the fact that the general colouration of these, like that of the eggs, varies between two well-marked types. In the first, the general colour of the down is of a light-toned, greyish-white, or creamy tint, while in the second, which is much the rarer of the two, it is of a darker tint, sometimes approaching a light brown tone. (The keeper will tell you that the light-coloured birds come from the light-coloured eggs, and the darker birds from the eggs of a deeper ground-colour.)

Upon the ground-tint, the mottlings or markings may be few and also lighter in colour, as is seen in Plate 6*a*, or they may be more numerous and of a deep brown or blackish tint, giving the birds an entirely darker appearance, as is seen in Plate 6*b*.

It is also almost invariably the case that where there are two young birds in the nest, one is strikingly larger than the other, as is seen in Plates 6*a* and 6*b*. This apparently points to the fact that there is a considerable interval of time between the deposition of the two eggs.

It only remains to repeat, for the satisfaction of bird-lovers generally, that thanks to the interest and the generosity of Lord Muncaster, the whole area of the Ravenglass Gullery is now strictly maintained as a bird-sanctuary, offering asylum to all the feathered fraternity that seek it save, perhaps, the egg-thieving Jackdaw or Carrion-Crow, and the marauding Sparrow-Hawk; and that, as in the case of the Farnes, it is the Sandwich Terns which are specially safeguarded by the most rigid protection that is possible.

That this has surely, if slowly, had its effect, and that the tide of extermination which previously threatened them has been stemmed and turned, is shown by the subjoined figures given to me by the keeper from the notebook in which he records the number of eggs seen in each year :—

1900	120	1907	271
1901	155	1908	275
1902	170	1909	385
1903	197	1910	406
1904	236	1911	423
1905	257	1912	403
1906	264		

CHAPTER III

THE COMMON TERN.

On the Ravenglass Gullery the Common Tern certainly justifies its trivial designation, for of the three species of its genus which make this area their summer home it far outnumbers the other two ; in fact, save for the ubiquitous and omnipresent Black-headed Gull, it is by far the most abundant of the many species of birds which nest here. Yet in spite of the facts that there are at least a couple of thousand pairs of Common Terns in the colony, and that they do not like the Sandwich Terns dissipate themselves into a series of small and isolated nesting groups, their presence is in a great measure overshadowed by the enormous numbers of their more successful and more noisy rivals the Black-headed Gulls.

The Common Tern is intermediate in size between its two nesting companions here, the Sandwich and the Lesser Terns, being 14.25 inches in length as against 16 inches for the Sandwich and 9.5 inches for the Lesser. In time of arrival from its winter quarters it is also intermediate here, coming after the larger species but before the smaller one. Yet unexpectedly enough, it is the latest of the three to commence nesting. During the last few days of May and the early days of June you may find scores of young Sandwich Terns hatched out. You will also find that the Lesser Terns have mostly completed their clutches of eggs and are fully engaged in the duties of incubation. Yet in spite of their much greater numbers you will scarcely find an egg of the Common Tern, though a little patient observation will show that the whole colony is in a state of restlessness and high excitement ; that the nesting fever, in fact, is running a high course among and within them.

An extended tramp over the whole area of the sand-hills

will show that the main nesting-sites of the Common Terns are two in number, and that in character these are sharply marked off from those of the Sandwich Terns already described. While these latter practically always nest either upon the flat-topped summits, along the ridges, or around the higher or central slopes of the sand-hills proper, the main body of the Common Terns never choose these situations, preferring as they always do those more level, consolidated and grass-grown areas which, forming larger or smaller rounded recesses, lie in amongst the irregular masses of the ever-changing sand-hills themselves. To reach the nearer of these two nesting-areas from the village, one must cross the river by the ferry and walk over the encircling zone of sand-hills which abuts barrier-like on the river estuary, and which is occupied by an outpost of the colony of Gulls. These form a wildly clamorous cloud of birds, which swoop and snarl viciously and continuously at you until you have passed safely beyond range of their sanctuary. Having accomplished this, you reach a comparatively level and far-continued stretch of fine green turf, where the short grass, close-cropped by the abounding rabbits, is in marked contrast to the long coarse, wind-tossed marram grass of the surrounding dunes. This stretch of turf you will note, forms a kind of natural amphitheatre having a radius of about a quarter of a mile, and forms the favourite nesting-ground of the Common Terns, the birds being scattered irregularly over its whole area. As you walk across, the birds rise in numbers before you, fly well up aloft and then commence circling round, and giving out continuously the thin, somewhat high-pitched and long-drawn *peee-rab*, *peee-rab*, which forms their characteristic call-note—a ready means of identification of the species when once the ears have become thoroughly accustomed to it. As you pass away they will gradually re-settle, and through the field-glasses may be readily discerned thus early in their season, scratching out their shallow nesting-holes in the short

grass, and subsequently breasting these into shape by a slow rotatory movement of their bodies. In this process a touch of the comic is supplied by the efforts of the birds to maintain at a suitable angle of elevation their beautiful long tail-feathers lest these should by any chance come into contact with the ground just beyond the nesting-hollows. In fact the birds seem just as anxious about the safety of their tails as an old cock Blackbird is, when scratching for food among the autumn leaves and dew-drenched grass on the outskirts of a beech copse.

Now if you observe closely, two sharp points of contrast between Gulls and Terns will here force themselves upon you. In the first place it will be noticed that the Gulls prefer to make their nests along the highest ridges and the uppermost and central slopes of the adjacent sand-hills, in this respect sharing their habit with the Sandwich Terns ; but that the Common Terns prefer not exactly the lowest slopes, but just the area where these merge gradually into the central level space already mentioned, and where the short grassy turf begins to replace the long marram grass. All round this fringing intermediate area nests may be found from the middle of June onwards by the score or the hundred, as also, though not so numerous, all across the level central amphitheatre described. In the second place, you cannot fail to notice that where a mixed crowd of Gulls and Terns "take the air" together, they almost immediately sort themselves out into separate layers. A thickly-peopled stratum of wildly excited Gulls occupies a space perhaps from 20 to 50 feet above your head, and then up above these, the more rarefied stratum of Common Terns holds the air for another vertical distance of 20 to 30 feet. Both my companion Mr. W. M. Birkett and myself noted and remarked upon this curious separation of species time after time as we crossed the area where the respective nesting-sites merged into each other, and the more so as it never occurred with the Sandwich Terns and the Gulls.

Having reached the further side of this level stretch of turf, a second and higher rampart of blown dunes confronts you. On its lowest and central slopes it is thickly grown with marram grass (the group of Sandwich Terns seen in Plate 2 was taken here); above, it is almost bare of vegetation and is topped by a plateau of pure drifting sand. A tramp of some 300 yards across this brings you to a descent into a second natural, dune-circled hollow only a little smaller than the former one, and here again the Common Terns are present in hundreds under the same conditions, save, perhaps that they are more thickly concentrated, and that the surface of this area is more broken and uneven, being dotted with numerous half-sandy, half grass-grown, little rounded knolls of which the birds are exceedingly fond as nesting-sites.

But beyond the birds that are crowded in the two chief centres described, there always seems to be an overplus which prefers to nest in smaller communities, and sometimes indeed in single solitude. A few pairs may be found nesting here and there on the lower skirts of the sand-hills not far from the Gulls, or on the quiet secluded banks of shingle hidden away among the hills and shared as nesting-haunts with the Oyster-catcher or Ringed Plover; on one occasion I found the single nest of a Common Tern out on the open beach a quarter of a mile away from the nearest of its kind, yet not more than a hundred yards from a small colony of Lesser Terns. By way of complete separation from the main body, some eight or ten pairs of birds have taken themselves right away to the south side of the estuary, where, entirely free from the presence both of Gulls and Sandwich Terns, they nest among the shingle in complete isolation from the rest of the bird world.

I have already remarked that in 1907 I was able to pay a second visit to the ternery during the last few days of June and the early days of July, and I then found that whereas the Sandwich Terns had all but entirely concluded

their season and the Black-headed Gulls were in the final stages of theirs, the Common Terns were just in the midst of their nesting operations, and their area presented a scene of great animation and excitement. To attempt to take a census of the colony would have been quite out of the question. But on July 2nd, 1907, I took a stroll round one portion of their nesting quarters, and noted down the number of nests I passed and the eggs contained in each. In all, and without any attempt to be exhaustive in the matter, I counted within a space of about 300 yards, 232 nests which contained 371 eggs. A rough analysis of these gave the following interesting result:—

102	Nests contained	one egg each	..	102
121	„	two eggs each	..	242
9	„	three eggs each	..	27
<hr/>				<hr/>
232	Nests			371 Eggs.
<hr/>				<hr/>

These particulars do not bear out the statement usually given in the textbooks that the normal clutch of eggs laid by the Common Tern is three, for at the time when my figures were noted down the nesting-season was quite at its height, and practically all the eggs were being incubated. On the other hand it is only fair to state that when I paid my final visit to the ternery on July 7th, not a single young bird was hatched out, and not a single egg showed signs of chipping. Apparently however, 1907 must have been a very late year with the birds, for my friend Mr. C. Oldham who visited the district from June 21st to July 13th in the previous year (1906) states* that he saw the first young Common Tern in a nest with two unhatched eggs on June 28th, and that by July 5th most of the eggs were hatched.

The elementary principles of variation among the individuals of a species can nowhere be more easily or more

* "Zoologist," May, 1908.

convincingly illustrated than in a large concourse of birds such as is congregated together in one of our busy nurseries of sea-fowl. Even a little casual observation is sufficient to show that the range of variation is a very wide one, and this, whether one regards the sites of the nests, their materials and surroundings, or the number of eggs and their differences both as to ground-colour and markings. And it is an easy step backwards to correlate such externally-expressed differences of habit with corresponding differences in internal organisation and structure, and to conclude that no two birds (like no two human beings) are exactly alike "in all their works and ways."

In the matter of nesting-sites, most of these as has been stated already, were found to be on the short close-cropped grass, but many nests were placed on the longer grass; others, though more rarely, on the bare sand, on ground which was half sand, half shingle, or again on a stretch of shingle or even of larger stones. And in this respect there was a general difference between the Sandwich Terns and the Common Terns which was unmistakeable, for whereas the great majority of the former preferred to nest on the bare sand, an equally numerous majority of the latter preferred the short grass. And another general difference between the two species which was equally marked showed itself with regard to the nests. Scarcely any of the Sandwich Terns collected anything in the way of material for a nest: with the Common Terns, though many of them were content with mere scratches, the great majority did make some attempt at forming a nest. Indeed, some of the nests were of considerable bulk—for Terns—and consisted of quantities of dried grass loosely interwoven, and occasionally straggling a foot or more outwards from the centre of the nest. A nest here consisted of a few dried leaves of ragwort, another there of a few dried grass blades, a third of the freshly-plucked leaves of silver weed. In one case a nest was seen to be composed of a ring of stones—a material more often

used by the Lesser Tern, the Oyster-catcher and the Ringed Plover—while a most exceptional one was made of dried fir-twigs, some of them half an inch thick, arranged roughly along three sides of a triangle crossing at the ends, the eggs being deposited in the centre. I do not mean to suggest that the birds had actually brought these twigs over from the mainland to serve as nest-making material. They were in reality the remnants of fir branches placed on the level spaces among the sand-hills to serve as cover for the rabbits.

Passing next to the eggs, the range of variation in these both as to ground-colour and markings is remarkable. The ground-colour varies from a pale green to a dark dusky-brown tint and generally speaking is much darker and duller, and therefore less reflective of the light, than is the ground-colour of the eggs of the Sandwich or the Lesser Terns. Consequently, it is less adapted for showing off the markings, and the eggs are therefore much less beautiful and attractive than those of the other two species. The markings in rare instances were almost as fine as pepper-dust, and almost uniformly distributed over the surface of the shell, while at the other extreme they formed a continuous zone of thick, dark, interfusing blotches which almost covered one-third of the shell from the thicker end. Between these extremes all intermediate gradations could be seen, and occasionally one came across altogether abnormal specimens of a faded and pallid bluish tint.

Having photographed a representative series of nests and eggs, I turned my attention to the birds themselves. A few days previously my accustomed hiding-place—a large crate such as is used for packing crockery, thickly drawn with dark green fir branches—had been placed near one of the nests in order that the birds might become thoroughly accustomed to its presence and appearance. (As a matter of fact I had two such crates in use, a plan which enabled me to do twice the work I otherwise should, for while I was actually using the one, the other was fixed

near the nest upon which I intended next to work.) That they had done so was shown by the fact that they did not display much timidity in returning to their nests after I had once disappeared from view into the interior and screened myself off in the rear with a series of larger branches left for the purpose. One nest at this spot was within 18 inches of the side of my crate, and the mother bird fearlessly returned to her eggs and continued to sit during the many hours I was hidden within arm's length of her.

I spent in all three whole days in trying to portray the Common Terns at home, allowing them to pose before me both in action and at rest. After being disturbed, the sitting bird would at first fly wildly round among the ever-moving throng of birds that always seemed to be winging their way from the ternery to the estuary and back again, and on returning she would alight several feet or even yards back from the nest, and would then sometimes walk right on to her eggs and settle down without the least show of hesitation or fear. On other occasions, however, she would hang back for a considerable period before feeling finally inclined to return to duty. On one such occasion her mate appeared on the scene, and taking in the situation at a glance he began to scold her for her lethargy. It was just as though he were saying to her: "Now, come along, my dear; this will never do! If you don't get back to those eggs they'll be spoiled, and we shall have to start everything over again. So come along!" and rounding off his precept with a good example, he commenced to run forward towards the nest. His ruse was successful; she followed for a space, and he paused when the goal was nearly reached; she then ran right past him up to the nest and settled down to her duties, he, meanwhile, maintaining his strategic position in the rear. As soon as she was settled he flew away again and left her on the nest. This interesting little incident is illustrated in Plate 8, where "he" is seen in the background, "she" just settling down on her eggs, and it may be remarked

that this was the only occasion within my three days' watching that I had both birds at the nest together. On other occasions she settled on the nest in different positions, now giving me the opportunity of a full-face portrait as shown in Plate 9, and now that of a full side-view, as seen in Plate 10. In these two illustrations there is well brought out an interesting, if minor, point of differentiation between the Common Tern and the other two species to which it is so closely allied, viz the Arctic and the Roseate Terns. This has reference to the length of the tail-feathers. In the Common Tern, the long, pointed wings, crossed near the ends as the bird folds them in to the sides, are seen to be, both in side and front elevation, just about equal in length to the long outer feathers of the tail seen underneath. In the Arctic Tern these corresponding lateral feathers of the tail are longer than the wings, as is shown to be the case in Plate 30, while in the rarer Roseate Tern they are *very much* longer, as may be seen in Plate 25; in fact this extreme length of the tail-feathers is, as will be shown later, one of the chief distinguishing characters of the Roseate Tern.

But to return. For the following day's work I transferred my attentions to the nest of another bird only a little distance away where my cratè had already been set up, and this bird, as she gained confidence, gradually came to alight after flight nearer and nearer to her treasures, until finally she came to earth right at the edge of the nest, and within the field upon which my lens was focussed as accurately as possible. This was the opportunity I had been awaiting: the opportunity, viz. of seeing at close quarters, of admiring, and of trying to photograph what is to me one of the chief glories of these lovely Sea-swallows, to wit, their long, powerful, and beautiful wings; beautiful alike in their shape, their proportions, their contour, their buoyancy, their pose, their ease and grace of motion, and not least so, in the dazzling whiteness of their sunlit

underparts. My readers may judge for themselves from the illustrations in Plates 11, 12, and 13 as to whether I have overpainted the picture!

But such a study of the Tern as is shown for instance in Plate 12 supplies other points of interest than that of the mere beauty of the wings. The first glance at such a photograph shows the very unequal development of the chief organs of locomotion, the wings and legs. The former, obviously, are very strongly and powerfully developed, and from this it would naturally be inferred that the bird is endowed with great powers of sustained flight, and that it spends much of its life on the wing—an inference which is quite in accord with the facts. On the other hand it is equally noticeable that the Terns have very short legs, and from this weakly developed leg-power it would, also naturally, be inferred that the birds do not depend so much upon walking or running as a means of locomotion—an inference which again fits in with the facts of their daily life. As a matter of fact I have on many occasions seen Terns bring their wings into play in order to make up for the deficiencies of their legs if I may be allowed to use such a phrase. I have seen the Common Tern, for instance, alight on the grass near its nest, and run forward as much as 15 or 20 feet on the level, still keeping its wings erect during the whole passage in order to assist its progress. Similarly I have seen the Roseate Tern run down a sloping shelf of rock on to its nest with its wings aloft and active during the whole journey, in this instance obviously using them as a brake upon its momentum. I have also watched the Lesser Tern alight on a bank of stones, gradually walk up its gentle slope to the nest, and where the stones were particularly large or the passage especially difficult its wings have been instantly raised to help its legs to surmount the difficulty!

There is still another way in which the Terns bring their great wing-power into play for the same purpose. When a bird alights after flight its widely extended wings

naturally form the chief balancing forces used to arrest the impetus of flight, and to assist it in securing firm foothold on the ground. It is evident that the shorter the bird's legs and the larger its wings the greater is its difficulty in alighting and securing its balance—especially when it comes down with a dash. For a very brief space of time, therefore, the wings remain extended and *practically at rest in their extended position*. This generally fractional portion of a second is the photographer's chance, and should he fumble or hesitate with his exposure his plate will present him with a hideous blur instead of an interesting picture. And it may perhaps be of interest to state that for the exposures which produced the photographs here reproduced, my focal-plane shutter was set at 1-100th of a second, and my lens was working at f/11.

CHAPTER IV.

THE LESSER OR LITTLE TERN.

Having secured a series of photographs of the Common Tern as described in the previous chapter, the second portion of my week in the early July days of 1907 was devoted to that charming little miniature of the group, the Lesser Tern; *the* Tern, indeed, which, partly perhaps from its smaller size, but chiefly because of its more engaging and confiding qualities, has ingratiated itself more intimately than any of its fellows into both my natural and my ornithological sympathies.

Unfortunately, the Ravenglass area contains only a mere sprinkling of birds of this species; indeed, I doubt whether there are more than about fifteen to twenty pairs all told. More unfortunately still, it is the only one of the three nesting here whose numbers appear to be stationary, if, indeed, they be not slowly decreasing year by year—an opinion I venture to state in full cognizance of the fact that it is much easier to overlook both isolated nesting pairs of Lesser Terns or even small contingents of two or three pairs, than it would be of either of the other two species. This circumstance arises from the fact that not only are the Lesser Terns much less numerous, but they are also much less sociable in disposition, and thus occur in very much smaller detachments on their nesting-sites. These sites again are far more widely dispersed over the area than is the case with either the Sandwich or the Common Terns.

To gain an accurate insight into the nesting range, and the haunts within that range, of the Lesser Tern, it is necessary to tramp over the whole area not only of the sand-hills proper, but of the adjacent sea-coast as well, and to extend one's survey for at least a couple of miles to the

north of the estuary where the Gullery is, and for at least half that distance on the southern side ; where, as has been already remarked, neither Gulls nor Sandwich Terns are to be found nesting. As a result it will be noted that, unlike the Sandwich and the Common Terns, the Lesser Terns *never* nest upon or within the sand-hills themselves, but that in every instance their little colonies (I have never found more than six pairs in one group) are located on the coast-line just above ordinary high-water mark ; and that given suitable stretches of sand or shingle, they are just as partial to the tidal banks of the estuary and its contributory streams as they are to the shore of the open sea. At intervals between June 1st and 8th (1912), I walked over at least six miles of this coast-line both on the estuary and on the sea-front, and I only succeeded in finding nine nests. Of these, five were in one locality, two others were each quite isolated, and the remaining two nests were on a patch of shingle on the south side and at least two miles distant in a straight line from the most northerly haunt. When I last visited the district in 1907 there were at least double the number of nests and eggs, and on the little estuarine sand-bank on which my photographs were obtained, and which then contained six pairs, not a single nest was in 1912 to be seen, though the boatman told me he had noticed a nest containing two eggs there only a day or two before.

The little sand-bank I have mentioned is the nearest and the most accessible of all the nesting-sites of the Lesser Terns, and in 1907 it contained the largest number of birds. It is situated just across the river from the village, and to reach it one has (with the necessary permit in hand) to take the only ferry-boat that—during the nesting-season—is allowed by the owner of the estate to ply across to the bird-sanctuary beyond, and on nine occasions out of ten one's first acquaintance—original or renewed—with the Little Tern will be made either before starting or on the way across. For this little tidal river forms the happy and

continual hunting-ground of the colony of Lesser Terns that nest just across on its further shore. And there, beating up or down the curving course of the stream, as the chances of the moment may be, comes a little, white-winged, winsome bird, with cap of black upon its head, with line of body fully extended, and with long, pointed, silver-edged pinions glinting in the sunlight as it catches them, and carrying the little bird along easily, buoyantly, gracefully, and yet rapidly, some twelve or fifteen feet perhaps above the surface of the water. Its keen little eyes detect some palatable prey in the moving current beneath, and a sudden swoop on subtle wing, followed by a deftly-aimed thrust of its somewhat lengthy bill, enables it to reach and capture this. On it goes again, and perchance, if fortune favours, or the bird itself be hungry, this little white swallow of the sea (it is only $9\frac{1}{2}$ inches in length, our common land swallow being $7\frac{1}{2}$ in.) will give you a sight of one of the prettiest performances, partly aerial, partly aquatic, that anyone, be he bird-lover or not, could ever wish to see. For of a sudden the Little Tern will quaver in its flight and halt. Then for a few seconds maybe, it will remain poised in the air with beating pinions, just like a Kestrel does over a stubble, or a Kingfisher occasionally over his native stream, and before one realizes (for the first time one sees it) what is going to happen, a sudden, swift and headlong plunge is taken right down into the depths beneath. A little fountain of splashing and scattering spray rises from the spot radiating outwards, and a moment later out comes the little diver with his capture in his bill. This little performance will at once captivate your bird-sympathies, since, for alertness, neatness, boldness and dash it is unsurpassed. And the fact that it is done by this little baby fisher of the sea simply increases your admiration both for the bird itself and for its fearless and impetuous plunge. And if your little acquaintance is in the diving-mood, you may see the incident repeated (as you may also with the Sandwich and the Common Terns, though in neither case

either so frequently or persistently, or with such sheer abandon) perhaps a dozen times in succession as your boat carries you across; and still your eyes will follow with delight the lines and motions of the little white bird until your boat grates its keel on the shelving beach beyond.

After landing, you at once make for the sand-bank on the right round which the river bends, and upon which the Lesser Terns have made their home. But long before you reach it, the look-out birds have signalled your approach; and, one by one, they and their brooding mates rise in the air and circle round and about at a greater height than either Sandwich or Common Terns do when similarly disturbed. Like their *confrères*, too, they "resent you vocally," chattering and scolding at you as they wheel around their breeding-ground. Yet to my ears their characteristic and oft-repeated cry of *skaa-ap, skaa-ap* (sometimes, though more rarely a one-syllabled *skaape, skaape*) is a more pleasantly musical one than that of either of their congeners. With these latter, and with the Sandwich Tern more especially, the notes are harsh and grating and always so: in the case of the Little Tern there is a tone to which the ear is responsive and for which it is not ungrateful. The degree of difference, though of course not the intrinsic values of the calls and notes themselves, is roughly comparable in my ears with that between the harsh, churring, jarring notes of the Mistle-Thrushes, and the more pleasing and musical "chacking" of their winter companions the Fieldfares. There is another difference, too, and it is one that strikes upon you sadly. The Common Terns on the sand-hills will "round at you" by the hundred, the Sandwich Terns by the score; but the little Terns of the sand-bank only muster half a dozen pairs all told. And yet again, the nesting-quarters both of Sandwich Tern and Common Tern are closely adjacent to, or even surrounded by those of the Black-headed Gulls and, to some degree, all seem "friends together." Not so the Little Terns; their tiny settlements are isolated and

self-contained: save for an odd pair or two of Ringed Plovers or Oyster-catchers, they are remote from other birds, and in their sole possession.

Having now reached the area, you begin to quarter it with careful step and with an eye eager for the treasures that the anxious birds have left behind. And with care and patience you may succeed in finding all the six nests, and having done so you will not fail to notice that the birds have a distinct partiality, not as you would anticipate, for the broader, level central area of their little sand-bank, but rather for its narrowing seaward edges—just, in fact, where it begins to shelve gently downwards to the tide-washed stretch beyond. Instinctively you wonder at this strange selection of site, and in vain you try to follow back the argument that has prompted the birds in their choice. Naturally also, the thought of possible disaster rises to your mind—a disaster which was, in fact, a very real one for them during the summer of 1907. For I first visited their haunt during the early days of June and saw all their nests, none of which contained more than two eggs, though three is said to be the normal clutch. (I have however, on several occasions found a fair proportion of nests containing the full number.) Exactly four weeks later I was again on their little preserve, and they were then precisely in the same condition as on the occasion of my former visit. That is to say, all the six nests were again found but not in the same positions, and they contained respectively two, two, two, two, one and two eggs, all of which were being incubated though none showed signs of hatching. In the interval between my visits there had been an exceptionally high tide, and the birds and their nests had been simply washed out. On carefully searching the readily recognisable line to which this abnormal tide had reached, I found at intervals four lost eggs of the Lesser Tern and three of the Ringed Plover, all of which had been floated up, left stranded, and were half-buried in the sand. One could not help feeling sorry for

the disaster that had overtaken the birds in their unequal struggle with their environment, and a touch of pathos was added to one's emotion on noticing that three pairs of the six had profited nothing by their tragic experience. For they were again nesting on the self-same sloping bank from which they had so recently been flooded out. And as the keeper informed me (in 1912) an exactly similar experience had befallen the other little colony of four or five pairs further away north on the open coast. Twice in 1911 they had tried to nest, and on each occasion the tide had flooded their nesting-area with the result that not a single young bird had been hatched off successfully during that year.

A few words as to the nests. These were nothing more than the simplest of rounded depressions in the surface of the sand-bank, yet they were on the average undoubtedly deeper than those made by the Sandwich Terns further away. And there was much variety in the setting of these little nests. Here was one lightly scratched in the loose and shifting sand; no structure, no material, no adornment. There was another on a patch that was half sand, half shingle; a third entirely on the stones; a fourth lay where the wanton waves, after their play, had tossed their broken toys, the milk-white sea-shells; a fifth lay in the rut formed by a cartwheel in its passage across to the sand-hills, while a sixth was further back in the centre of a little encircling patch of sea-purslane. In some cases there seemed to have been an attempt either at structure or adornment, by the collection around or in the nesting-holes of little incomplete rings or equally incomplete linings, formed of bits of broken shells or tiny stones: a feature which may be seen in Plate 14, and which, while being only occasional in the nests of the Lesser Terns was almost common with those of the Ringed Plovers. In either case, however, one could not but be struck by the fact that such an arrangement of shells, whatever its purpose might be from the bird's point of view, rendered the nests much more

conspicuous, and to that extent, therefore, assisted in defeating the protective coloration and markings of the eggs.

These eggs have undoubtedly, in my experience, a much more constant colour both in ground-tint and markings, than those of any other species of Tern. Their prevailing light stone-colour, while it is not so light and clear as the ground-tint of the Sandwich Tern's eggs, is, on the other hand, a much more effective tint for the display of the surface-markings than is found with the other three species, and if the markings themselves were only larger and more conspicuous, the eggs would take rank for beauty immediately after those of the Sandwich Tern. But utility rather than beauty is behind Nature's purpose, and it cannot be doubted that the general colour-scheme of the eggs is effectively protective. Speaking again from my own experience, the eggs of the Lesser Tern are laid among lighter-coloured surroundings than obtain with those of the Roseate, Common and Arctic Terns, and this circumstance may possibly be correlated, as it may also in the case of the Sandwich Tern, with the lighter ground-tint that Nature has seen fit to arrange for the eggs of the birds (including Ringed Plover and Oyster-catcher) that are laid upon them.

In the cases where there is no collection of shells to guide the eye, the eggs of the Lesser Tern are much less easy to find than those of the other species. This is due partly to the fact already mentioned, viz. that they harmonize more closely with their surroundings, but partly also to the fact that the nests are placed singly and at greater distances from each other up and down the nesting-area than is the case with the other species. For instance, I have never found it possible to include two nests of the Lesser Tern in the same half-plate photograph, whereas with the Sandwich Tern eight or ten nests may be so included.

Earlier in the week one of my hiding crates had been transferred to the quarters occupied by the Little Terns, and fixed up in front of one of their nests. Even

within a short time of taking possession of this, my anticipations were realized, for it proved to be the case that in addition to the other engaging qualities I have mentioned, the Little Tern has also the admirable one of forming a good sitter to, and a good subject for, the ardent photographer of birds. For of all the five species of Terns I have photographed, the palm for courage, for boldness, and for self-possession in face of that usually awe-inspiring eye, the lens of the camera, was easily gained by this smallest member of the group. From the very commencement of my operations, extending as these did over portions of three successive days, I found that the Little Tern always made an earlier return to the nest after being disturbed, that she would always "sit tighter" than any of the others when she was there, that she would brook more noise and even commotion within my retreat, and tolerate its nearer approach to her nest, than any other member of the family. In a word, provided you have a suitable place of concealment the Lesser Tern is a very easy bird to photograph at close quarters.

There are several outstanding advantages in addition to some disadvantages in using the hiding-place I have described, one of the most important being that, among and between the fir or laurel branches which form its mantle, it is always possible, and with the least inconvenience, to see what is going on, not only at the nest upon which the camera is focussed, but practically all around the field of view of which the crate forms the centre. Such a possibility largely increases the range and value of the observations it is possible to make, and in this instance as in others it enabled me to gain many an interesting sidelight on the bird-life that was going on around and even some distance away. For instance, it resulted in my having under observation here at the same time, and all within a distance of about forty to fifty yards, four nests of the Little Tern besides the one before which I was fixed up, in addition to three nests of the Ringed Plover and one of

the Oyster-catcher. All these contained eggs which were incubating, though none showed signs of hatching even so late as July 5th, 1907.

But to return. I had not been hidden away many minutes before it became evident from the increasing loudness of their cries that the birds in their circling flights were gradually drawing nearer to their nests. The usual cry (given by both birds) as already remarked, is a twice repeated, distinctly two-syllabled *Skaa-ap, skaa-ap*; something like the alarm note of the Snipe, save that it was two-syllabled and given in a more leisurely way. But in a fit of excitement one of the birds would chatter out a sharp *chit, chit, chit, chit, chit*, rapidly repeated, anything up to a dozen times, to be immediately answered by its mate in the same way. It was nearly always possible to tell by hearing one or other of these notes, when the birds were coming quite near to their nests—a habit which I did not note as characteristic of any other species. Similarly the sitting bird would immediately respond to the call of her mate if given, and this without leaving her nest.

Within a few minutes, the particular bird for whose advent I was waiting, suddenly alighted within ten feet of her nest, and without the slightest trace either of hesitation or fear walked up to her eggs, surveyed them critically, shuffled on to them, went through the necessary and somewhat prolonged process of adjusting the eggs to her under-feathers and *vice versa*, and finally settled down without even a shade or trace of disquietude at the uncouth-looking object that now all but overshadowed (I had moved it considerably nearer before commencing) her and her treasures. There she sat, now prettily turning her head round and round enquiringly as though to ascertain what the other birds were doing, and where her mate was; now responding to his call-note; now standing up and rearranging her eggs with the object of making herself more comfortable, and finally settling down for a prolonged spell of duty during which, I may state, I never once saw

the male bird approach or attempt to relieve her. In fact, only in the case of the Arctic Tern have I actually seen the male bird come up, call his mate off her nest, and then settle down to incubate in her absence. In the case of two of the adjacent nests, the male birds alighted at varying distances from their brooding mates, and spent their time either squatting on the sand at rest, or in preening their feathers.

After a time I began my series of exposures, and in order to give some variety to these, I several times disturbed the bird from her nest—not so instantaneous a process with the Little Tern as with most wild birds I have tried to photograph. In Plate 14 the bird is seen just walking on to her eggs, and it well brings out the point I have mentioned, viz. that she was more interested in and concerned about her eggs than she was startled or alarmed at the hiding-place set up just in front of them. In passing I may remark that the rattle of the focal-plane shutter was entirely without effect upon her. In the next photograph (Plate 15) she is seen engaged in tucking the eggs underneath her feathers, and is using her bill to assist in the process, which is one that is neither so simple nor so momentary as might be supposed. Indeed, when a Tern settles down upon her eggs, there is a regular sequence of operations to be performed. As she lowers her body towards them, she generally pushes outwards and forwards her frontal band of breast-feathers, an incident which is better shown in the Sandwich Tern settling down in Plate 7. At the same time she practically “erects downwards” the whole of her under-feathers, and separates tracts of these from each other, in order to provide spaces for the eggs in between. Then there commences a general vibratory shuffling to and fro of the whole body, during which the bird is working the eggs in amongst the under-feathers, and trying to secure mutual and comfortable accommodation between these. Not unfrequently two or three successive attempts have to be made before suitable adjustment is secured, and it

often happens that, as shown in this photograph, the bill is requisitioned to assist, giving a strained and most unusual attitude to the whole body. In Plate 16 she is shown in a different stage of the process, while in Plate 17 another Lesser Tern is seen just in the final stage, both eggs and erected under-feathers being easily discerned. Finally in Plate 18 the latter bird has quite settled down to duty, and it is noticeable that here the "shoulder" of the wing is covered by the extended frontal band of feathers, whereas in the settling down process this forepart of the wing is seen to be external to and pressing upon the side of the body.

A careful examination of these five photographs will show at least three distinctive features in the evolutionary outfit of the Lesser Tern. The white, roughly crescentic band of feathers on the forehead is obvious at a glance; the black tip to the otherwise yellowish or horn-coloured bill can also be discerned; while finally the dark-coloured edges of the outer primary feathers of the wings (the textbooks say it is only the two outer *quills* which have *dark shafts*) running right backwards and terminating in an enlarged area of black on the wing-tips, are particularly well seen in Plates 15 and 17. I have never recognised anything corresponding to this little feature in the other four Terns, though in such a connexion one naturally recalls the dark wing-tips so characteristic of those nearest allies of the Terns—the Gulls. What may be its exact significance or relationship, I do not know.

It was a matter of the keenest disappointment to me that, as was the case with the Common Tern, no young birds of the Lesser Tern were hatched out when I made my final round of visits on July 7th; in fact I have never yet been fortunate enough to see the young of either of these species. But my sketch of the Little Tern, its haunts and its habits as I saw them, would be incomplete without reference to a little domestic scene that came before my eyes as I lay in hiding; a scene, moreover, which will live long

both in my memory and my mirth. On one of the nests not more than a dozen yards away from me a little mistress Tern sat brooding her eggs, when suddenly her faithful spouse alighted upon the sand near her with a little silvery-sided fish held crosswise in his bill. He sidled up to her quite affectionately as I thought and gently tendered her the offering he had brought. But to my astonishment, and probably in an even greater degree to his, she instantly flouted both him and his oblatory fish, and in evident appreciation of the beatitude that opposes the pleasure of giving to that of receiving and entirely to the advantage of the former, she gave him such a torrential outpouring of infuriated bird-feeling and language as, I hope, does not often fall to the lot of a poor hen-pecked husband, even in the bird-world. She chattered, and scolded, and shrieked at him like a perfect little fury, and with a rapidity and variety of utterance that were as truly astonishing as they were characteristically feminine. Whether he had stayed away from her too long in his search for food, whether he had been indulging in gentle dalliance with some other fair lady bird of the settlement, or whether the fish he had brought did not fall in with her taste or her mood of the moment, I know not. But whatever the count against him it must have been a heavy one, for she trounced him most unmercifully. And the poor little fellow stood there, meekly and in a half-stupefied sort of way and took it all, as perhaps a wise bird-husband should, without movement, murmur, or retort. And when she had said her say he flew sadly and silently away, carrying his fish with him. Doubtless he sought out some quiet and retired spot on the lonely shore where he could in solitude digest both his fish and his thoughts on her present discontents; where also perchance, he might calm his ruffled emotions and brace his courage to the point of a second home-going. And there I left him, with the hope that a more kindly reception might await him when next he presented himself and his hard-won catch to the lively little lady of his choice.

CHAPTER V.

THE ROSEATE TERN.

Having succeeded, as already shown, in photographing the Sandwich, Common, and Lesser Terns at Ravensglass, I was naturally anxious to complete my photographic record of our British nesting Terns by securing pictures of the two remaining species, viz. the Roseate and the Arctic; in fact I was doubly anxious to photograph the former because it was so rare a bird, and one, moreover, so apparently difficult of identification and access that at that time (1908) it was one of the very few remaining species of British birds that had never been confronted with the camera. But the difficulty was to discover a suitable nesting-haunt of such an exceedingly rare bird, and one, moreover, if possible, to which the Arctic Tern also resorted. After making enquiries in many directions and after also perusing a good deal of zoological literature which might possibly be of assistance, I finally ascertained the whereabouts of a locality which formed the nesting-ground of a very large colony of Arctic Terns and among which, so I was informed, a sprinkling of Roseate Terns had been known to nest during the years immediately preceding. Feeling that this was the only fairly accessible nesting-haunt in which I was at all likely to succeed, I determined to spend a week's holiday there—mainly in quest of the Roseate Tern. The locality in question consisted of a lonely group of small rocky islets, some four hundred yards long perhaps, and of a width varying from a few yards to about eighty at their widest, and one, moreover, whose only human habitation consisted of a lighthouse. Fortunately, I was able to obtain permission from the Elder Brethren of Trinity House to stay at the lighthouse, and

a very happy and profitable week I spent there from June 27th to July 3rd, 1908.

Now the Roseate Tern is not only by far the rarest of our British nesting species of Terns, but it is also one of the rarest of British breeding birds—a circumstance which arises from the fact that the shores of the British Isles lie just on the northern fringe of its breeding-range on this side of the Atlantic, and therefore only comparatively few individuals reach our islands during the annual migratory movement made for nesting purposes. Saunders states* :—“ It is an oceanic and southern species and is not known northward of lat. 57° , being merely a straggler to the eastern coasts of the North Sea.” Being so rare it is the more worthy of all the protection that bird-lovers can extend to it, and for that reason, and in consonance also with the wish of Mr. W. R. Ogilvie-Grant, who, on the occasion of my exhibiting a series of lantern slides of the Roseate Tern at a meeting of the British Ornithologists' Club in March, 1909, wrote : “ I hope you will not give the locality of the Roseate Terns, as once the spot is generally known, it will be hard to keep exterminators off ”—I do not propose to mention the locality where my photographs were obtained, feeling assured that all real lovers and protectors of birds will fully appreciate such reticence.

As a result of my week's residence on these islets I estimated that there were probably not less than 20,000 Arctic Terns, at least 1,000 pairs of Common Terns, and not more than 15 to 20 pairs of Roseates. This being so, the problem of identification was not exactly a simple one, and the question naturally arises “ How was it possible to locate the few Roseates among the many Arctics, and how can you prove that your photographs are really those of the Roseate Tern and not those of the other species, especially as you had never seen the Roseate Tern, its nest or its eggs, except in the museum ? ” A question to which I will do my best to give a convincing answer !

* Manual of British Birds, 2nd edition, p. 646.

The lighthouse-keeper had never seen the nest or eggs of the Roseate, and he knew only two things about it, (1) that it *did* nest on the islands, and (2) that it had a different cry from the Arctics, which he knew when he heard it. I of course didn't. This then, was the starting point in the process of identification. On the evening of Saturday, the day of my arrival, the lighthouse-keeper and myself went for a stroll about the islands to take stock of the situation and to arrange where my hiding-place should be fixed up ready to commence work. First we went out northwards towards a smaller islet lying just off the main one in that direction, the Arctic Terns, as we approached, rising in hundreds, circling and calling wildly and indignantly around and overhead, and then settling down again after we had passed. Presently my companion exclaimed: "There! that was a Roseate! Listen!" I did listen and I heard the cry repeated at somewhat lengthy intervals. It was certainly different—markedly different—from that of the Arctics, and I did not know as yet that there were any Common Terns on the islands. The alarm-note of the Arctics was a loud, rather long-drawn *Klee-yah, Klee-yah*—thousands of throats uttering it "in harshest unison." It had also a good deal of the snarl in it—quite a different tone and note from that of the Common Terns which I afterwards identified.

But the new note of the Roseate was entirely different. It was shorter, sharper, and very much harsher; in fact it quite rasped or grated on the ear when it came. It was generally uttered twice, but sometimes only once. Somebody has described it as being like the first portion of the double note of the Corncrake—*crake-craake*. But to my ears it was much harsher than that, and there seemed to be a much more distinct rolling of the first "r" in it. In fact it was just a rough, harsh, rasping *errark-errark* to me, given out rapidly and with a rapidly abbreviated finish as though the bird was really in too much of a bustle to finish it properly. The note of the Corn-crake

is, in fact, quite a leisurely, deliberate sort of note compared with the hurried, rasping alarm of the strenuous Roseate Tern.

Having once recognised the notes among those of the whirling crowds of all-loquacious Arctics that were flying around and above us, the next step was to lie down on the grass, wait for a repetition of the cry, then try to associate that cry with the bird that uttered it and watch where this bird alighted. So we lay down on the grass and listened and watched. After a little time it became quite easy to spot the bird that gave the *rrark-rrark*; and to fix the field-glasses upon it and watch its flight through the ever-moving maze of hundreds of other birds that were on the wing about us. And so at last, after many fruitless attempts (owing to the birds flying right away out of our range of view) we succeeded in watching one bird until it alighted on a ledge near the summit of a steep wall of rock that rose straight up from the sea, forming the front of the little islet beyond our own and separated from it by a narrow tidal channel some 20 yards wide. Then quite clearly through my glasses I could discern that *its beak was black and its breast had the rosy tint, delicate enough in all conscience, but still there*, and then I knew I had found the bird I had come so far to seek and a thrill of wild delight and exultation ran me through! A second bird alighted on that self-same sloping ledge of rock; a third and a fourth;—all identified as Roseates—and my joy was very full. We lay still and watched, and presently one, then a second, and again a third of the newly discovered rarities walked a little way down that sloping ledge of rock, turned sharply away from us and disappeared, apparently into some recesses or cavities of the rocks just below the outward line of the ledge. This looked as though they had disappeared to go on to their nests. After allowing a few minutes to elapse we jumped up from the grass, waved our arms about and sent the whole colony (which included Arctics, Commons and Roseates) flying pell-mell around us, just as they did

when we came. Again we lay down, waited and watched ; again we followed the course of operations just described, and again we saw them repeated exactly as before. Yet a second time we disturbed the crowd of birds, watched them fly around and settle again on the ledge, the three birds again in time disappearing down the same three portions of their rocky shelf, some of their partners remaining on the ledge after their better halves had disappeared. Then suspicion became a certainty : we carefully marked in our mind's eye the three places : my companion remained lying on the grass where we had watched the whole process, and I worked my way round (fortunately the tide was out or I could not have done so) to the islet beyond, clambered up the wall of rocks to the ledge we had noted, and without the slightest difficulty came upon the three nests of the Roseate Tern each placed in a separate and self-contained recess of the rocks and each containing only one egg. The distance between the two first nests was exactly 5 feet ; that between the second and third was 3 feet.

Apart from the light, thin, wiry grass that covered the larger portion of the main island, the flora was very meagre, not a single tree, bush or stunted shrub growing anywhere on the group. But in certain areas, especially on the islets to the extreme north and the extreme south, there was a most luxuriant growth of a small *Spergularia* which I took to be the marine form of *Spergularia rubra* and which in Bentham & Hooker's Flora* is described as *Spergularia marina* or Sand Spurry. On the areas mentioned the growth of this little, creeping plant was very dense ; indeed it seemed as though the uppermost layers of the stems and leaves flourished partly upon the dead and half-decaying stems of the older plants beneath. Both stems and leaves were thick and succulent, and the plant was flowering profusely. In fact, unopened buds, fully opened flowers and mature seed-capsules could all be found in plenty on the same patches of the plant's

* Vol. I., p. 75.

growth, and, as it happened, the first nest of the Roseate Tern I came across, and the one on which I photographed the bird, was placed in a recess of the rocks which was literally wreathed with the stems and pretty pink flowers of this little plant. The nest in question (Plate 19a), was made entirely of the loose dried stalks of the plant and as a reference to the subsequent photographs will show, growing stems and flowers of the same plant overhung the nest. The nesting material had not been woven or "constructed" in any way : the loose dead stems had simply been gathered into a thin layer, the centre of this rounded out and the egg deposited there. The bare rock beneath was easily visible through the interstices of the nesting material.

The nest adjacent to this was a much more bulky one. It was similarly built in a recess from which vertical walls of rock rose all around save at the front where the bird gained entrance, and was composed largely of the dried stalks of the spurry together with some of a species of *Atriplex* which also grew around and in part overhung the nest. But the most curious feature in the structure of this nest was a series of bones which had been loosely incorporated with the nest-material. (See Plate 19b). These bones I brought away with me as I was curious to know what they were. I subsequently submitted them to my friend Mr. W. P. Pycraft, of the Natural History Museum, South Kensington, who very kindly examined them and told me they were the "coracoid, part of the scapula, the humerus and the ulna of some species of plover." This was the more interesting in that during my week's stay on the islands I never saw any member of the plover family : not even the common Ringed Plover of our coast-lines, which I might perhaps have expected to meet with.

In addition to the three nests previously mentioned, I subsequently discovered by watching the bird from the interior of my hiding-place, a fourth nest, not on the ledge

I have described, but some twenty yards back from the cliffs towards the interior of the island. This nest also was placed in a recess among broken rocks, and the bird was quite invisible after she had settled down on her egg. It was the slightest nest of the four, merely consisting of a few reddish-brown, much broken stems of some plant which I could not identify. These were laid loosely and carelessly together and were not sufficient to cover the thin layer of blackish grit beneath. Strangely enough all round the edge of this nest there was laid (I can hardly think they were merely accidents of the situation) a sort of rim of flat stone-chips, the largest of which was exactly three inches long by one and a quarter across. A few pieces of dried lichen of both the bright yellow and dull grey kinds which abounded on the surrounding rocks, completed the material of this nest.

During my week's stay on the islands, I discovered in all eight undoubted nests of the Roseate Tern—undoubted, because in every instance I actually watched the bird alight near and then enter the nest. It may therefore be appropriate at this point to mention one or two facts I noted in connection with these and the situations in which they were placed. Four of the eight nests, as already mentioned, I discovered on the islet lying to the extreme north of the group, and the remaining four were found strangely enough on the island furthest to the south. I did not come across a single nest of the species nor did I once identify a bird on the main island on which the lighthouse was built. Now this main island was the chief haunt of the vast colony of Arctic Terns, and it was very noticeable that the Common Terns which I subsequently discovered entirely avoided this island—or perhaps it might be more appropriate to say, avoided association with the main body of the Arctics, and chose as their nesting-grounds more or less self-contained areas remote from those of their nearest relations. One such nesting-area of the Common Terns was found on the little plateau which formed the summit

of the northern islet, and just behind the cliff near the top of which the three Roseate Terns' nests were found. It was impossible to avoid the conclusion that where all three species—Roseate, Common and Arctic—were found nesting in somewhat close proximity, the Roseates preferred associating themselves with the Common Terns rather than with the Arctic Terns; a conclusion which was strengthened by a similar condition of things at the opposite islet, i.e. the southern one, of the group.

But while this general conclusion was so obvious, it was equally apparent that both as individuals and also as a species the Roseate Terns here—or at all events the eight pairs which I found and watched—preferred nesting sites which were more separated and more isolated even from others of their own species, than either the Common or Arctic Terns did. Each pair preferred privacy to the gaze of the multitude in its domestic arrangements: in fact it seemed obvious that not only privacy but an attempt at concealment had been made. Each one of my eight nests was made in a cleft of the rocks instead of out in the open; in each case the bird disappeared as she entered her nest; in no case was any portion of the bird visible after she had settled down on her eggs; in no case could any one of the birds catch a glimpse even of her nearest neighbour as she sat on her own nest.

One other conclusion seemed equally obvious, viz.: that the Roseate Terns here preferred nesting-sites placed at greater elevations than those of the majority either of the Arctic or Common Terns, and that they also had a distinct preference for nesting near the edges of the sea-cliffs, rather than further inland. One pair in fact had chosen as their station a recess in the rocks just behind the highest ridge of all on the southern islet, and only a few feet from the place where this commenced to descend steeply into the sea. In no case was I able to identify a Roseate or find a nest on the main island occupied by the Arctics, and which was to a larger extent than any of the others grass-grown.

In so far as bulk and structure were concerned, the nests of the Roseates were intermediate between those of the other two species. The Arctic Terns were evidently the least concerned about nest-making, hundreds of them being content with simple scratches devoid of all material in the soil or grass, or with laying their eggs on the bare rock : the Common Terns here in marked contrast with the same species at Ravensglass practically all made nests, many of them of considerable bulk : all the Roseates made some attempt at a nest and also at gathering material for it, though nothing that could be called a structure resulted in any case.

A few words may next be said about the eggs. Most of the textbooks, I believe, state that the Roseate lays two or three eggs to the clutch. I can only record against this that each of the eight nests I found contained only a single egg, and that I visited the nests in question practically every day from June 27th to July 3rd and found no addition to the number in any case. Possibly the textbook records are made from results observed in more southern climates, where larger clutches are perhaps possible ; possibly also, as the bird, being essentially a southern species, nests nearer and nearer to the northern limit of its breeding-range the clutches may be smaller. But this of course is surmise only.

With regard to any special characteristics in the form, colour and markings of the eggs, I can only say that I could discover none. While one egg was distinctly pyriform in shape another was almost a perfect oval and others were intermediate between these two extremes. In one egg the very beautiful markings were concentrated in a thick zone near the larger end, as may be seen in Plate 19*b*, while in another, much smaller markings were fairly evenly distributed over the whole surface as shown in the companion photograph. But these and other features such as ground-colour and the colours of the superficial and underlying markings, were just as variable as they are in the eggs of

the Common and Arctic Terns though it should be remembered that in making these statements my field experience runs to eight eggs only. It is commonly stated that it is fairly easy to identify eggs of the Roseate when placed in a group with those of the two nearly allied species. All I can say is (and I had hundreds of eggs both of the Common Tern and of the Arctic within a couple of hundred yards), that if I had placed the eight eggs which I found of the Roseate Tern say along with twenty eggs of the Arctic and twenty of the Common Tern, it would have been practically impossible for anyone to sort them out correctly into their three groups again. As a final word, I may state that I carefully measured the first four eggs I found, and these were $1\frac{1}{2}\frac{7}{8}$, $1\frac{1}{2}\frac{5}{8}$, $1\frac{1}{2}\frac{3}{8}$, and $1\frac{1}{2}\frac{1}{8}$ inches in length—a variation of a quarter of an inch (roughly 1 in 8) between the largest and the smallest.

Before setting out for the island, I had managed to secure through the kindly interest of a couple of friends, an old crate to be used as a hiding place, with a supply of laurel branches to draw through the bars and make my concealment complete. These I took over with me in the steamer in which I made the journey out. With the aid of the lighthouse keepers this arrangement was carried over to the little northern islet where the first nests were found, and fixed up in a suitable niche we were fortunate enough to find on the steep wall of rocks described, and some twelve to fifteen feet back from the first nest of the Roseate Tern. Fortunately it just commanded beautifully both the nest of the bird and the ledge of rocks on which the Roseates always alighted after flight, and on which I first located them. On the following day my companion went over with me, neatly tucked me up inside this crate and left me there in concealment to enjoy what was probably a unique experience for a field naturalist—a whole day spent practically on the doorstep of a pair of Roseate Terns. Scarcely had the keeper left me and crossed over the tidal channel to the main island on his return journey to the lighthouse,

before the crowd of roving birds which included Arctics, Commons and Roseates began to circle round and make attempts to settle on the ground near their respective nests. And I may say *en passant* that over and over again, the Roseates showed themselves bolder in returning to their nests than either of the other species, always being the first to alight and re-settle on their eggs. Within ten minutes a couple of Roseate Terns were down on their nesting ledge, and time after time I noticed that one of my birds almost invariably alighted on a little point of rock projecting above the shelf. Naturally I focussed my lens on this point and made a number of exposures, not only when the birds just touched earth thereon after flight, but also when they stood there quietly gazing at my hiding place, and wonderingly trying to solve the *raison d'être* of its existence. Sometimes the bird would alight with tremendous force upon this point of rock, while at other times she would descend easily and gracefully, holding her wings aloft for a brief space until foothold was secured. Plate 20 shows her in this position with her wings poised beautifully yet momentarily above her ere she folded them in to her sides—as seen in the following illustration, Plate 21. And here again in my experience did “Nature and the books” apparently disagree. For these latter state that of all our Terns the Roseate is the most graceful and slender. Yet standing there right in front of me and almost at eye level the bird gave me an impression of stoutness and plumpness, as also of being better set up on her legs, which I never received from an equally close view of any other species. But perhaps I have never viewed any of the others from so splendid a point of vantage. In Plate 22 a side view of the bird standing on the same point is given.

In these two Plates it may be noticed that immediately below and to the left of the point of rock on which the bird is standing a second and smaller point of rock stands up. It was the invariable practice of this bird to alight on the higher point, jump lightly over to the lower and smaller

one, and then to commence running down the slope of rock some three or four feet in length immediately beneath, and of which the point in question formed the outward boundary, for it was in the cleft of rock at the base of this slope that this pair of Roseates had made their nest. In the next picture (Plate 23) the bird has reached the foot of this slope and is just about to settle on her nest. A portion of the egg is dimly discernible in the deep shadow beneath her breast. In the next photograph, Plate 24, she is seen quietly settled on the nest, and two points I have previously mentioned are well brought out, viz. : (1) the fact that the nest is placed deep down in a cleft of the rocks which rise almost vertically around, and (2) the picturesque surroundings due to the growth and flowering of the little marine *Spergularia* described.

My next and final Plate of the Roseate Tern, Plate 25, is a very interesting one, showing as it does that she was good enough to give me an almost full-face portrait of herself sitting in her bower of pretty pale-pink rosettes and gazing calmly forwards at that large uncanny eye of the camera—the lens. But it also shows something of far greater interest, supplying as it does the final photographic proof of the identity of my bird as the Roseate Tern. To the field naturalist who does not include the gun in his equipment for the study of natural history (and I am proud to say that I have never yet taken the life of a single bird in following up my hobby) there are five points to be included in the identification of the Roseate Tern, viz. :

- (1) Its quicker wing-strokes during flight.
- (2) Its harsh cry of *crrark-crrark*.
- (3) Its blackish bill with a slight band of red at the base.
- (4) The delicate roseate blush on the breast from which the species derives its name.
- (5) The exceedingly long lateral feathers (the so-called “streamers”) of the tail, which are said to be six inches longer than the central ones.

Obviously, only one of these features, the last named,

can be shown in an ordinary black and white photograph, and while this extreme length of the tail-feathers is well shown in the side view in the two previous plates, it is especially brought out in front elevation and with much beauty and distinctness in this particular photograph supplying, as I have stated, the final photographic proof of the identity of my bird.

There is still another point of great interest in this photograph. For if it be carefully examined it will be noticed that, as is usual with Terns, the wings are so long and pointed that their ends actually cross over when the wings are folded in and the bird is at rest. But the point of special interest lies in the fact that the bird's left wing (the one crossing over to the left in the picture) is *above* or *in front* of the tail-feathers, while the bird's right wing is seen to cross over *underneath* or *behind* the tail-feathers. In other words, the bird is sitting on her nest with her tail between *her* wings—a curious little habit which I think has never been noticed before, and one which probably nobody ever suspected any bird of practising. And if the photographs in Plates 23 and 24 are again examined it will be seen that in each case the same feature is shown in the side-view; the end of one wing being crossed over *above* the beautiful long tail streamers, the end of the other *below* them. An observer's written or verbal assertion of such a curious and unsuspected habit would probably have been questioned; a series of actual photographs, however, will surely carry conviction!

I was in earnest hopes that before the end of my week's stay one or more of the young Roseates would be hatched out. But I was doomed to disappointment, for when I paid my final round of visits on Friday July 3rd, the day on which I had to commence my homeward journey not a single egg showed any sign of hatching. The same condition of things held good with regard to the hundreds of nests of the Common Terns I hastily scanned, whereas, by way of contrast, many of the young Arctic Terns were

abroad and creeping away from their nests. Herein therefore, lies another interesting point of semblance between the Common Terns and the Roseates, in that both are apparently later than the Arctic Terns either in arriving at this particular habitat, or in commencing nesting duties after they have arrived.

CHAPTER VI.

THE ARCTIC TERN.

As stated in the previous chapter, the little group of islet rocks which formed the haunt of a few pairs of Roseate Terns was also the home of a vast colony of at least ten thousand pairs of Arctic Terns; these probably forming one of the largest, most thickly populated and most highly concentrated terneries in the British area, and one moreover that was in striking contrast with the Ravenglass ternery in that it was entirely free from the presence (even as casual visitors) of Gulls of all species. Indeed, save for a few pairs of Oyster-catchers, there were no other nesting birds on the islands but the Arctic, Common and Roseate Terns.

As our steamer approached the rocks on the voyage out, we had seen and heard an increasing number of Terns, and now, having been transferred with our baggage to one of the ship's boats, we were rowed up the channel between two of the islands towards the tiny landing place immediately beneath the lighthouse. Here it was interesting to note that the outlying rocks and stacks, as well as the shelves and ledges of the inner islands and rocks were thickly crowded with Terns, resting, sunning, or preening themselves there. As we pulled nearer, all these birds with one infectious impulse took wing together in a great crowd, and after circling round and round in ever-changing curves, settled down again on more distant rocks or on the same ones when our boat had left them safely behind. And here a new and unexpected point of interest at once arrested my attention. Many of the birds (I closely scanned them through my field-glasses, though it was easy to note the point with the unaided eye) scattered through the dense groups that crowded the situations I have named, had

conspicuous patches of white on the forehead, these white patches being larger and more irregular than those which similarly placed, form part of the normal summer plumage of the adult Lesser Terns (see Plate 16). But there were no Lesser Terns here, and as at that time I was unaware of the fact that the Terns take about a year to acquire the full adult breeding plumage, I was at a loss to account for so large a number of birds obviously in immature plumage. They were, however, birds of the previous year, which at their next autumnal moult in August would acquire the full adult dress. It was plain that these birds were taking no share in nesting operations, for on many occasions during the week I noted birds in this same intermediate stage of plumage, and appropriately enough, these were always on the outlying stacks and rocks right away from the nesting-areas. On no occasion did I see one among the Terns on the main island, and it then occurred to me as passing strange that although I had spent four separate weeks among the Gulls and Terns at Ravenglass I had never seen, either on or off the nesting-area a single Tern in immature plumage, save only the newly hatched chicks of the Sandwich Tern.

As our boat was rowed in to the landing stage and the lighthouse keepers came down to meet us, we could see the birds in a busy swarm rise up from their nests and fly wildly and clamorously round, full of resentment at our intrusion. And as we walked up the little pathway towards the entrance of the lighthouse, I could see their nests and eggs within two or three feet of the little wall that bounded the pathway; could see also that they nested in numbers close up to the lighthouse buildings and outbuildings. A little distance away their lithe, light forms were to be seen dotted irregularly about every boss and angle and outwork of the rocks and the rocky eminences; others were to be seen like large snowflakes flecking the adjacent grassy areas; in fact, wherever one went and in whatever direction one turned, nests and eggs of the Arctic Terns abounded. Many nests

were placed right at the edge of the little open pathway that ran across the whole length of the island ; one nest indeed was actually placed on one of a series of rough rock-hewn steps that formed this pathway at a place of descent ; others were right up against the white-washed garden wall (this wall was a favourite perch with many of the birds) : indeed it would probably be as easy to enumerate the situations where nests were not, as to give a full list of those in which they were. Here, however, are a few jotted down in my notebook as I rambled about :—

- (1) On ledges of the rocks both away from and near to the sea-cliffs.
- (2) In patches of thrift or sea-pink.
- (3) On the short grass.
- (4) On open spaces of smooth, weather-worn, lichen-covered rock.
- (5) On the bare soil round the entrances to the rabbit burrows.
- (6) Among broken rock-débris and even near the little rock-pools.
- (7) On patches of small stones.
- (8) At the base of a boss or vertical wall of rock.
- (9) On the shingle just above high water mark.
- (10) In patches of sorrel, and again in patches of pennywort.
- (11) On a wisp of straw that had lodged just outside the garden wall.

But after my week's careful watching and comparison ; after going over the whole ground again and again, one thing was very evident in the habits of the Arctic Terns here, and that was, the marked preference they displayed for placing their nests either actually among the rocky ridges and areas themselves or on the grass in immediate proximity to these, rather than right out on the grass-covered portions of the island remote from the rocks. I do not mean to suggest that they would not, and did not, nest on the stretches of grass : they did so, and in

numbers ; but they much preferred the areas where rocks and grass commingled. This was well shown by a series of observations I made. I roughly marked out a rectangular area one hundred and forty yards long by thirty yards across on the grassy portion of the largest island. On the eastern side of this selected area an irregular, broken line of weather-worn rocks bulged up, dark and grey and lichen-grown, some two or three feet above the grass : and beyond this ridge the island was grassy again. On the western side a similar ridge of rocks protruded, but expanded into a mass of bare broken rock which extended away to the sea-cliff. On June 28th, I walked along the eastern ridge and counted the nests and eggs visible on either hand as I went. Result : eighty-two nests containing one hundred and thirty-three eggs. Then I walked along the opposite ridge and passed by ninety-three nests containing one hundred and sixty eggs as I went. Finally I walked along the central line of the grassy area away from the rocks and could only record thirty-four nests containing sixty-two eggs.

TOTAL RESULT.

			Nests.		Eggs.
Eastern Ridge of Rocks	..	..	82	..	133
Western „ „	..	..	93	..	160
			<u>175</u>		<u>293</u>
Central grassy area ..	..	..	34	..	62

A series of figures which quite proves the point I have tried to emphasise as to nesting sites.

The materials of which the nests were composed offered the most striking variations. In hundreds of cases no material at all had been gathered, the eggs being simply placed in little shallow depressions scratched out in the bare soil, on the short grass or on the smaller pieces of disintegrated *débris* ; or in natural hollows found ready

on the harder soil, on the grass, or on the lichen-stained rocks. In hundreds of other cases the nest-material was of the scantiest description: a few long straggling grass stems dropped near the nesting-hollow rather than used as a lining for it, a few small stones, a few fragments of plucked lichen: a patch of drifted seaweed cast by the tide on the shingle beach. At the other extreme were a few nests that—for Terns—were really bulky: one of loosely interlaced stems of dried grass, another of a considerable collection of stones, a third of a large quantity of dried lichen, while a fourth, which was probably the largest nest I saw, consisted of a large wisp of straw that the birds had appropriated—perhaps to save the trouble of collecting material for themselves. In some cases the birds had taken strange fancies, for two nests I saw contained the skull and other whitened bones of some bird—possibly one of the Terns of the previous year. In another case a bird was peacefully sitting on her nest whose edge contained a jam-pot lid edged obliquely into the soil, and on the top of which her tail almost rested as she sat; while strangest of all, one industrious pair of birds had collected a large quantity of rabbit “buttons,” and had arranged these in closely packed concentric rings to form their nest, with the eggs deposited in the centre. This was the nest at which the bird shown in Plate 26 is alighting.

Glancing next at the eggs, even a cursory examination sufficed to show that as in the case of the Common Tern these also exhibited the most remarkable variations, both in the ground-colour, and in the character and arrangement of the markings, superficial and underlying. Eggs in the same nest, for instance, were sometimes entirely different in ground-colour (in extreme cases one could hardly conceive that the same bird had laid them); and in addition one of them might be almost entirely devoid of markings, while its companion was well, or even handsomely marked. In some cases the markings were largely concentrated into a broad zone near the larger end, while in others

a series of much smaller spots would be fairly evenly distributed over the whole surface. Sometimes the pointed ends of the eggs were in opposite directions, in other instances they were in the same direction, while in the relatively few nests which contained three eggs, there did not seem any intention on the bird's part to deposit or to leave these, with the pointed ends arranged round a common centre, as in the case of Peewit or Snipe. But doubtless, as the nests of the Terns are so shallow, and so structureless, the normal arrangement of the eggs is more readily disturbed when the sitting birds leave their nests, and this may account for the more irregular or haphazard appearance of the eggs as they lie in the nesting-hollows. As to the number of eggs forming the clutch, I made a careful note from this point of view on the nests enumerated on page 74 and found that of the two hundred and nine nests, sixty-seven contained only one egg each, one hundred and thirty-eight contained two eggs each, while only the remaining four nests contained what is usually regarded as the normal clutch of three eggs. I am strongly of opinion that practically the whole of these eggs were well incubated when my note was made, as in several instances eggs were hatched out before the end of the week.

My first two days were spent in trying to secure photographs of the Roseate Tern, and in case any young of this species were hatched out during the week, I intended to return to this "first love" for at least another day's work. But as this much desired result was not attained, my attention along with my hiding arrangement was transferred to the more numerous species, and my remaining four days were spent with them. At least half-a-dozen different birds at their nests were attempted in succession, and in only one instance did the bird give me any trouble or exhibit any shyness in returning to her nest. Each morning after breakfast, and again after the mid-day meal, the light-keeper accompanied me to the scene of action,

where my crate, shrouded in evergreens, had usually been placed overnight, and, after covering me in at the back of the crate with the spare branches of laurel provided for the purpose, walked away and left me to my delightful communion with the birds. As a general rule these were back at their nests within a few minutes of the keeper's departure.

It would, doubtless, be generally anticipated that birds which nest in close and crowded communities would exhibit much less fear of the human presence, and *a fortiori* of an innocent-looking, if deceptive, hiding-place used by a bird-photographer, than those which like the Oyster-catcher or Ringed Plover for instance, prefer to nest in single pairs and far from the noisy crowd. And this anticipation was abundantly realized with the Arctic Terns, for these birds displayed much courage and boldness in returning to their nests. On more than one occasion in fact we removed the crate to a different nest after the morning session, and found that the birds we approached for our afternoon sittings were not in the least nervous or shy at its presence. And these birds, indeed, exhibited their fearlessness and courage in other and more *striking* ways than the one mentioned. For as you rambled out across and around the islands, Terns by the hundred would rise at your approach and from every throat would come that loud, harsh, half-guttural, half-snarling, alarm note which, through my ears, resolved itself into an angry *Klee-yah, Klee-yah*, making a very babel of resentful cries along the area of your passage. Behind you, the birds would soon re-settle on their nests, in front their companions would take up the chorus and the attack. For many of the enraged Arctics went much further than mere vocal remonstrance. After rising a little way in the air down they would come, one, two, three, or even half-a-dozen in succession, making a determined swoop at your offending head. In the large majority of cases the swoop would end by just failing to reach the object of attack, but in not a few instances there were Arctic Terns sufficiently bold or sufficiently vicious

to carry their attack to its logical and physical conclusion, and deal you a nasty blow on the head with their beaks by way of emphasising the argument so many of their fellows were conducting above. As I seldom wore either hat or cap while abroad, I can speak feelingly on the matter. There was one particular bird indeed, against which I had to protect myself with a stick on every occasion when I passed her nest. And here perhaps may come in a note of comparison. The Sandwich Tern, like the Arctic, will swoop frequently down at an intruder on the nesting-area especially when the young are out, but I have never seen or felt one round off its downward dash with a blow. The Common Tern, the Roseate Tern and the Lesser Tern I have never seen make even a show of attack at an intruder ; and undoubtedly in this respect the Arctic Tern is the bravest, if the most tiresome, of the genus.

I may mention here that as our steamer first approached the islands, the flag had been run out on the flagstaff as a mark of greeting and welcome, and as we landed it was flapping lazily in the fitful breeze. The Arctic Terns seemed to have the strongest possible objection to its presence and motion, for so long as it continued to fly aloft, they did not cease—now singly, and now in relays of perhaps five or six birds—to attack it with unflagging zeal and persistence.

I have just stated that, to my ears, the ordinary alarm note of the species under consideration sounded as *Klee-yah*, *Klee-yah*. But in addition to this, I occasionally heard a note that was very much like the shrill, piping, rapidly repeated alarm note of the Oyster-catcher. From the Arctic Terns it came just as sharp and shrill, and just as sharply repeated, though it was not nearly so loud nor was it continued so long. Another note, frequently given out by a swooping bird, was a sharp, short, yet not unpleasant rattling note, something like the successive metallic clacks of a ratchet wheel. This note was uttered some five or six times in rapid succession, and was the most resounding and

perhaps also the least unpleasant to the ear of all the notes and calls I heard. Sometimes indeed it came in a much softer and more subdued rendering, something like the *tack, tack, tack* of a Wheatear or a Chat only that it was given more leisurely and deliberately, and was in this case apparently not an alarm note at all, but one rather expressive of satisfaction or content.

Nothing in the whole range of bird photography has proved so fascinating to me as the attempt to photograph that outstanding glory and beauty of a Tern—its expanded wings. I have already given some description of the process in the chapter on the Common Tern (see pp. 42-44), and at least one similar result here with the Arctic Tern gave me greater pleasure still. With the aid of the keeper I had fixed up the crate before the nest of a sitting bird on a little expanse of grass, and immediately the bird began to return and to alight near the nest I exposed for the wings. My first photograph resulted in the very beautiful picture shown in Plate 26. As it happened my camera was fixed up within the crate in such a position that the lens was not only pointing to the nest (being focussed on the remote edge of the nest where the bird was expected, in time, to alight) but was also facing the sun, although this is a condition of things I usually try to avoid; and it is due to this accidental circumstance that the beautiful effect of light and shade obtained in the photograph is due. In Plate 27 is shown a side view of the wings of a different bird alighting, while in the following one (Plate 28) appears a back view of the expanded wings of a third bird, taken under similar circumstances. In these two photographs it can be noticed that, in each case, the nest and eggs are placed on the grass, but in close proximity to the adjacent rocks.

I had always felt a burning desire to try to photograph some of the Terns while they had young in the nest, and especially, if possible, to secure pictures of the parent birds feeding their young. Fortunately young Arctic Terns

began to hatch out before the end of the week, and observing one evening an egg that was beginning to chip we moved over the hiding place and left it near the nest ready for action on the morrow. Next morning the bird was just clear of the shell and I was safely hidden away in my crate just before 9 o'clock. The photograph in Plate 29*a* shows the mother bird walking up to her nest in which lies the helpless chick and a portion of the shell of the egg from which this had emerged. Between 9 o'clock and 12, I made a series of exposures on the birds of which this and Plate 29*b*, showing the bird carrying away the empty egg-shell from the nest, were included, but during the whole of these three hours the father bird only once came to the nest with a little fish, and this he handed over to his sitting partner. Naturally I was on the photographic *qui vive* at this little incident, expecting as I did, that the mother would call out the little one and offer it the fish, and I was anxious to photograph her while doing so. I therefore hesitated to make the exposure, when suddenly the mother bird swallowed the fish herself and my chance was gone. But during the further period of prolonged watching that this unexpected solution of the fish difficulty entailed, it was most interesting to observe the actions of mother and chick. The mother bird for instance, never once went away and left the chick to itself, save only when she carried off the empty egg-shell, or when I disturbed her from the nest. She never attempted to go away in search of food either for herself or for the little one, but seemed to realize that it was her steadfast duty to stay at home and guard her helpless offspring. Equally, too, she seemed to realize that it was her husband's duty to look after the commissariat, both for his wife and child. And so, during the whole time, she remained at the nest guarding and nursing her infant, and the father bird did not again return until nearly half past twelve. As to the little one it "behaved variously" in the meantime as infants mostly do, but the one thing that it seemed resolutely resolved *not* to do was to lie still in its

nest and be kept warm by its mother's breast. As it gathered strength, it would creep away a foot or so from the nest now in front, and again in the opposite direction, but scarcely ever did she follow and try to brood it in its new position. It seemed to be her deliberate intention—and it was very fortunate for me that it was so—to remain there at the nest and try to coax the youngster back to her, though generally it was a long wearisome business before she succeeded.

And when it was accomplished, her own peace, whether of body or mind, were not even then secured. Immediately she had coaxed it safely back and got it snugly tucked in beneath her under-feathers, it would commence a series of struggles to get at least some part of its anatomy—generally its head—out and beyond her, so that it could hear and see what was going forward in the new and noisy world it had just entered. And then, having managed this for one new position or attitude, it seemed immediately to discover that a change was desirable, and would probably be more comfortable. So the whole disturbing process was begun again, and again concluded; restarted, and continued *ad infinitum*. The poor tormented mother bird turned and shifted, rotated, settled and re-settled herself, shuffled and was pushed about in all directions to accommodate her ever restless and ever tireless little one, yet through all its wayward proceedings she never once seemed to chide or scold it, nor to resent its peregrinations beneath and around her, although it must have tried her patience severely.

And as time went on the little thing got hungry,—ravenously hungry at last—and in its infantile way, and with baby-like impetuosity and persistence, it told its mother so, and urgently appealed to her for something to stay its hungerous pangs. And she tried to appease and to comfort it as well as she could. On at least a dozen occasions I watched the little nursling shuffle out from underneath its mother, turn round, put its tiny baby bill up to

hers and touch it, saying as plainly and as plaintively as possible : " Please mother, I'm *so* hungry, *do* give me something to eat : *please do !* " By way of response the mother gently opened her bill, placed the end of it inside the little one's, and then " twittered " her two mandibles together as though she were really giving it nourishment of some kind from a hidden store within. But I could not actually tell whether anything really passed between them. At all events the youngster seemed pacified for a time, and the mother got a little rest. Not for long however, for the restless and still hungry infant was soon asking for more.

At last, however (and it was now three and a half hours since my vigil commenced), the end—and the father—came. Suddenly he appeared hovering over the nest, and the next instant alighted. At the moment the youngster was out of the nest and sitting on the short grass just in front of its mother, but immediately it saw the father's approach, it rushed off in its staggering infantile way, to meet him, using its little wing-stumps as paddles to assist its progress, as may be seen in Plate 30. It ran along calling as it went, and you could almost imagine it saying : " Oh Daddy, Daddy : I'm *so* hungry. Do for goodness sake go and get me something to eat. I've had nothing all the morning and I'm just famished." And the mother, as may be seen in the picture, looked pityingly down at her midget, and then at her husband, as much as to say : " Yes, it's quite true." And, as may also be seen in the picture, the father looked guiltily down at the little one, as much as to say : " Poor little chap : I'm *awfully* sorry ! just be patient for a few minutes longer, and I'll go away at once and see what I can find." And off he flew on the instant. In about ten minutes he returned with a tiny fish in his bill, and this was immediately handed over to the chick, which in the meantime had taken refuge again beneath its mother's breast. This little incident is shown pictorially in Plate 31, where the fish can be readily seen in the little one's bill. Although it was his first fish he knew what to do with it, and after a

brief struggle it had disappeared. A few minutes later a second fish was brought by the father and disposed of in the same way.

I have already mentioned that the first young bird of the year was hatched out on June 29th. A second was out on June 30th, and others followed apace. On July 1st, I counted thirteen young birds, and saw scores of eggs chipping. On July 2nd, in a casual walk across the island and without any attempt to be exhaustive in my record, I counted twenty-two young birds.

Young Arctic Terns in common with other nidifugous young such as Peewits and Snipe, soon begin to creep away from the nest, resting on the grass or other surroundings when they are exhausted and can travel no further. In common too with the other species the young in their downy coats are all protectively coloured, though it frequently depends upon chance circumstances whether the chicks derive the full measure of protection which their flecked and mottled plumage is capable of affording. This point is effectively illustrated by the two photographs in Plate 32. The two little Terns shown in these photographs were hatched out on successive days; the nests from which they came being within ten feet of each other. In the one case (*a*), the bird had crept away from its nest on to the grass, where despite its protective colouration it is obviously easy to see at such close quarters. In other words it has not happened to take the fullest advantage of the protection which Nature has given it, by settling among surroundings which harmonize with its colours. In the second instance (*b*), the baby Tern has also crept away from its nest, but in this case has settled down on a piece of dark-coloured, variegated, lichen-grown rock. As it happens the colours of this situation harmonize very effectively with those of the bird which has settled among them, and thus so complete a harmony is formed that the bird is practically invisible even close at hand. In the presence of a hungry and vigilant bird of prey, there

is no question as to which of these two young birds would be the more likely to survive : the fitter to do so is obviously the one that has chanced to take the most complete advantage of the concealing coloration with which Nature has endowed both.

As in the case of the Sandwich Terns, the young Arctic Terns exhibited two distinct types of coloration, viz. : a darker and a lighter—a difference which is well brought out with the two young birds in this Plate. But, in contradistinction to the Sandwich Terns, it was only, in the specimens I happened to see, the ground-colour down which exhibited this variation in the young Arctic Terns, for the markings were in every case of a decidedly dark tint, giving to these young birds in general a much darker appearance than in the other case. The young Sandwich Terns were born amongst the lighter surroundings of bare sand, and were on the average lighter in colour : the young Arctic Terns were hatched out amid the darker surroundings of bare or lichen-grown rock and deep-green grass, and were on the average decidedly darker in colour. Before, however, pushing these observations to the length of a general conclusion it would be necessary to examine both species under varying conditions and in several of their nesting-haunts, and that, unfortunately I have not as yet been able to do.

CHAPTER VII.

THE COMMON TERN.—AN ADDITIONAL NOTE.

In the chapter on the Roseate Tern I have described the nesting site first discovered as being situated near the summit of the cliffs on one of the smaller islets to the north of the main island. I have stated also that my hiding crate was fixed up on a ledge of this cliff a little distance back from the first nest of the Roseate Tern, and only a few feet below the top. During my prolonged watching and waiting for the rarer species, my attention was frequently attracted by the dense throng of birds that were nesting on the summit of this islet, some individuals of which came and stood right on the edge of the cliff within a few feet of the top of my crate. My suspicions that many of these birds were not Arctic Terns were first aroused by noticing that with some of them, which I could see clearly, the bill for about one-third the distance from the tip was very dark-coloured, being red for the remaining distance. (The bill of the Arctic Tern is, normally, red throughout its length.) Next I noticed that in some cases the wings when folded in, were just about equal in length to the tail-feathers, and that the mantle was of a lighter colour as were also the under-parts. Then I began to listen for the call-notes and found them not nearly so loud or insistent as those of the Arctic Terns, which from their immense superiority both in point of numbers and noise all but overwhelmed everything else. These notes in fact were thinner and more drawn-out, and finally I recognised the comparatively slow given *peee-rah*, *peee-rah*, so characteristic of the Terns at Ravenglass and my identification of the Common Terns, which I did not expect to find here, was complete.

This discovery put me on the *qui vive* for the rest of the

week, and I went thoroughly over all the islands that were accessible without a boat, and came to the conclusion that there were few, if any, short of a thousand pairs of Common Terns on the group. The conditions under which these nested formed a most interesting contrast with those of the same species at Ravenglass, and in this connection I noted down the following :—

(1) No Common Terns nested on the largest island, which as I have stated, was monopolised entirely by the Arctic Terns and a pair or two of Oyster-catchers.

(2) Three small islets to the north and north-east of the main island, as also a much larger islet at the extreme south all contained large nesting colonies of the Common Terns in addition to some Arctic Terns.

(3) The outer seaward portions of all these islets consisted of bare or lichen-grown rock in all stages of disintegration, but towards the centre of each were one or more spaces grown over with thick prostrate masses of matted vegetation, the uppermost layers of which seemed to thrive on the semi-decaying layers underneath. This vegetation consisted of :

(a) Dense luxuriant masses of *Spergularia marina* or Sand Spurry, seen both in bud, flower and fruit.

(b) A species of *Atriplex*.

(c) A small plant now almost entirely in fruit which appeared to be scurvy grass.

It was on these areas thickly grown with vegetation and on them alone, that the Common Terns nested, and they had appropriated them all on each of the outer islets referred to. A number of Arctic Terns nested on the fringes of these areas, but chiefly on the bare rock.

(4) The nests of the Common Terns were thickly crowded over all these sites, and were in this respect in marked contrast to those of the Arctic Terns on the central island, as they were also with those of the Common Terns at Ravenglass. In fact not even with the Sandwich Terns have I seen such large and highly concentrated

collections of nests as were to be found here. To give an instance, on July 2nd, 1908, I carefully went over one such nesting haunt on the islet on which I first discovered them, and on a space which was no more than ten yards by seven I noted down that there were ninety-five nests containing one hundred and sixty-seven eggs. Of these

						Total No. of Eggs.
28	nests	contained	1	egg	each	.. .. 28
62	„	„	2	eggs	„	.. .. 124
5	„	„	3	„	„	.. .. 15
<hr/>						<hr/>
95						167
						<hr/>

In one instance on one of the other islets I saw four eggs in one nest, probably the joint contribution of two birds.

(5) Another striking difference was that the Common Terns made a more general attempt at nest-building than the Arctic Terns did: if an equal number of cases of the two species were considered, there was not the least doubt as to this difference in habit. While it was true that in many cases the nest was a very small and rudimentary affair it was also the case that many other nests were very bulky collections of material indeed, and with well shaped cavities for the reception of the eggs. Indeed as a general deduction I am certain from what I have seen, that of all the five species the Common Tern is the most advanced in the matter of nest building; more birds attempting a nest and the best nests being both much larger and better constructed than the best nests of any other species.

In one instance, I was just able to include a nest of the Common Tern and a nest of the Oyster-catcher in the same half-plate photograph.

(6) The Common Terns were neither so bold nor so vicious as the Arctics were, for on no single occasion did one of the former ever swoop at me as I walked across

their nesting sites. And this timorousness was indeed shown in another interesting way. For when I was walking underneath a mixed crowd of Arctic and Common Terns, these two species, like the Black-headed Gulls and the Common Terns at Ravenglass, occupied different strata of the space above. The bolder Arctic Terns would only rise a little distance above the intruder's head, flying backwards and forwards within their stratum continuously. Then up above these the Common Terns occupied a separate layer, and kept to it, so that one could not help remarking that both on their nesting grounds and in their "flying grounds" this species seemed anxious to dissociate itself from the presence of its more pugnacious and more vociferous neighbour. Exactly why, it would be very interesting to know!

(7) When I paid my final round of visits on July 3rd no eggs of the Common Terns were hatched out and none showed signs of chipping, while many young Arctic Terns were abroad in their district. Obviously, therefore, the Common Tern is either later in arrival here than the Arctic, or if the two arrive together, the former is somewhat later in commencing to nest.

This concludes the record, as far as my opportunities have enabled me to carry it, of the conditions under which the home life of our British nesting Terns is passed. I can only repeat that it does not pretend to be exhaustive, and that I am as fully conscious as any one can be of its lacunæ, both descriptive and photographic, and especially with regard to the young of the Roseate, Common and Lesser Terns. The exigencies of my daily duties, however, do not allow me to respond to the call of the birds when this is loudest and most alluring, nor to pay a prolonged visit to their nesting haunts when this would prove of most advantage from an ornithological and photographic point of view.

PLATES.



THE SANDWICH TERN.

On the bare sand among the marram grass.



THE SANDWICH TERN.

Settled on their nests in the long grass.



THE SANDWICH TERN.

) Black-headed Gull and Sandwich Tern nesting side by side.



THE SANDWICH TERN

Plate 4.

Round the summit of a small sand-dune : one bird stretching.



(a) Struggling out of its shell.



THE SANDWICH TERN.

Plate 5.

(b) Lying prostrate in the nesting hollow.



(a) Lighter coloured young.



THE SANDWICH TERN.

(b) Darker coloured young.

Plate 6.



THE SANDWICH TERN.

Settling on her two beautiful eggs.



THE COMMON TERN.

Male bringing female back to the nest.



THE COMMON TERN.

A front view of the sitting bird.



Plate 10.

A full side view.

THE COMMON TERN.



THE COMMON TERN.

Plate 11.

The white sails of the Sea-Swallow.



THE COMMON TERN.

The beauty of white wings.



THE COMMON TERN

The poetry of pose.



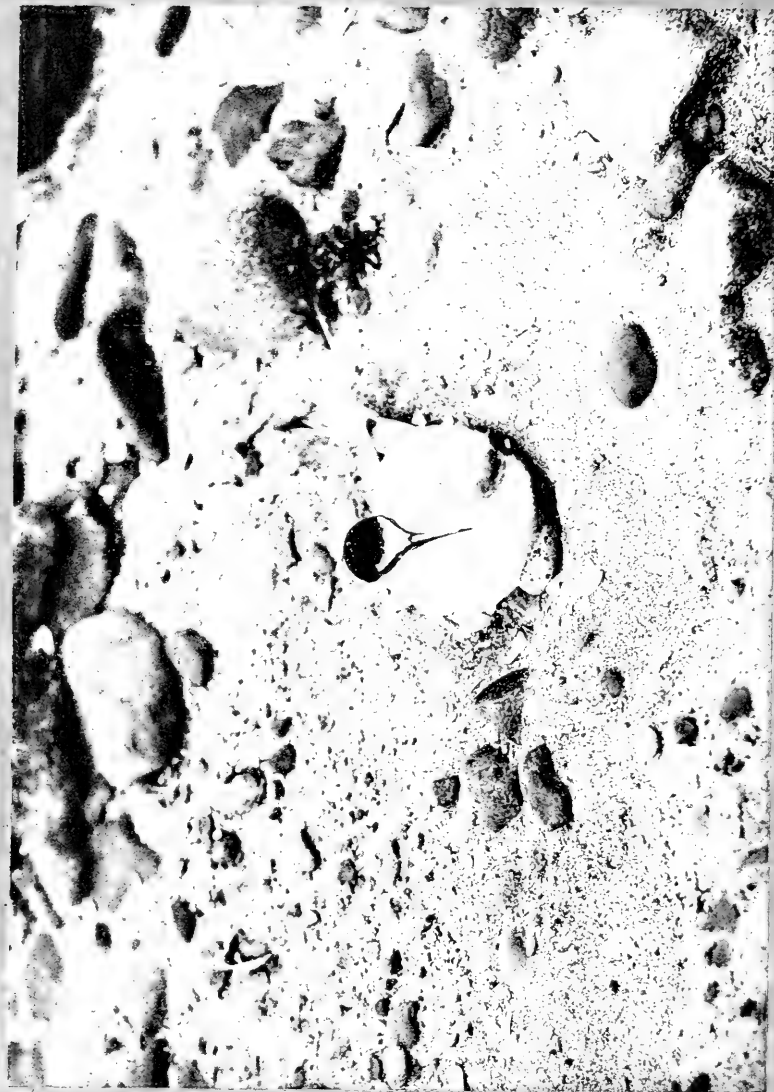
THE LESSER TERN.

Walking on to her eggs.



THE LESSER TERN.

Tucking them in with her bill.



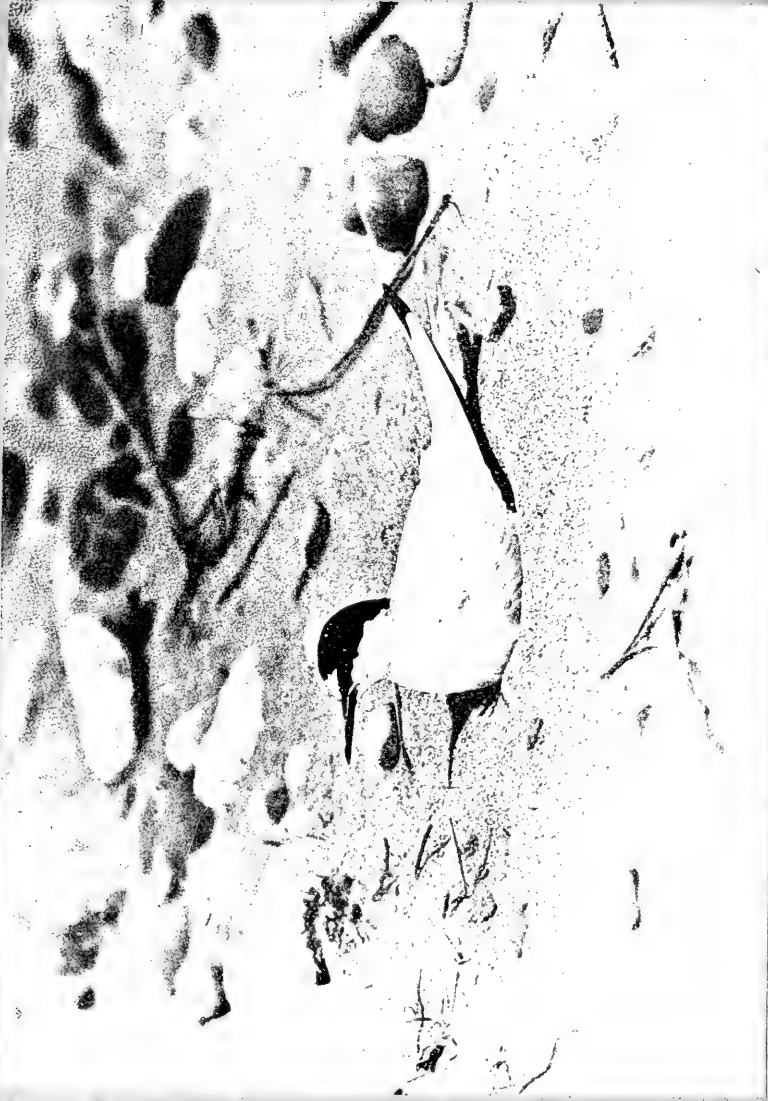
THE LESSER TERN.

Setting down to duty.



THE LESSER TERN.

With under-feathers erected to accommodate the eggs.



THE LESSER TERN.

The "shoulder" of the wing is covered by the extended breast-feathers.



(a) The nest was made of the stems of *Spargularia*.



THE ROSEATE TERN.

Plate 19.

(b) Some small bones were included in the nesting-material.



THE ROSEATE TERN.

She alighted gently on the point of rock.



THE ROSEATE TERN.

And stood there gazing forward at the crate.



Plate 22.

A full-length side-view.

THE ROSEATE TERN.



Plate 23.

THE ROSEATE TERN.
Just about to settle on her nest.



THE ROSEATE TERN

In her bower of pale pink rosettes.



THE ROSEATE TERN.

Holding her tail between her wings.



THE ARCTIC TERN.

A beautiful study in light and shade.

Plate 26.



THE ARCTIC TERN.

A full side view of her expanded wings.



THE ARCTIC TERN.

A back view of her beautiful wings.



(a) Walking on to her nest and helpless chick.



THE ARCTIC TERN.

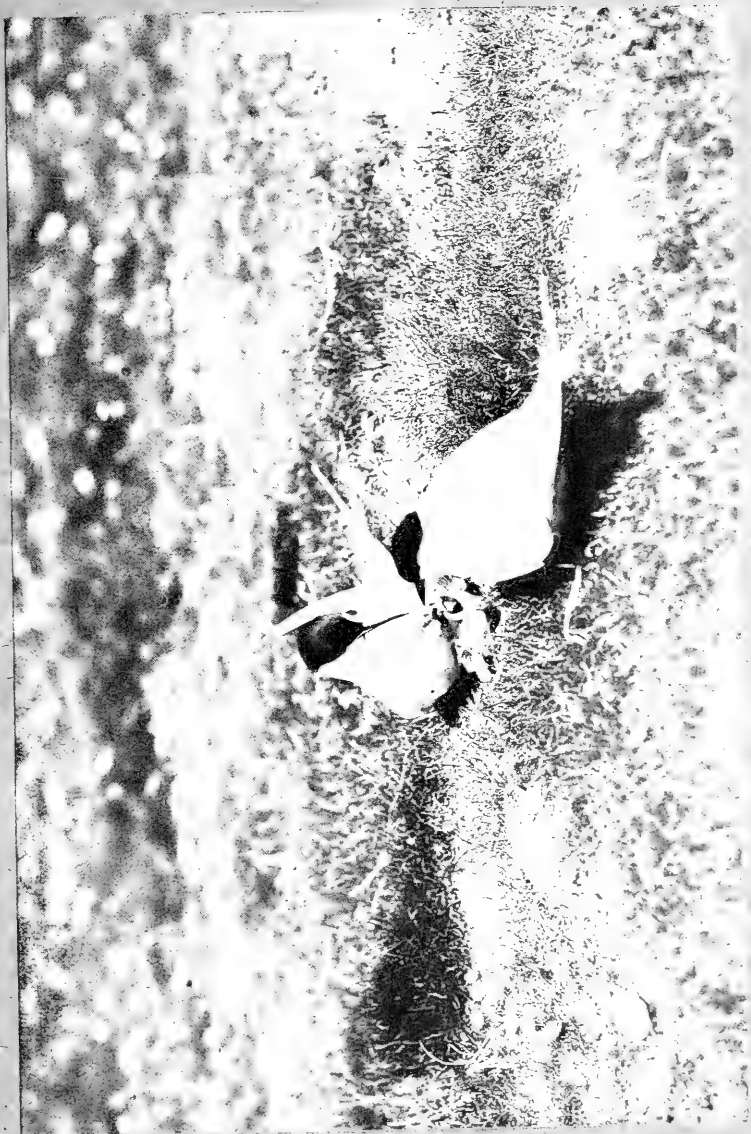
(b) She picked up the empty egg-shell.

Plate 29.



THE ARCTIC TERN.

Rushed off to meet him, using its little wing-stumps as paddles.

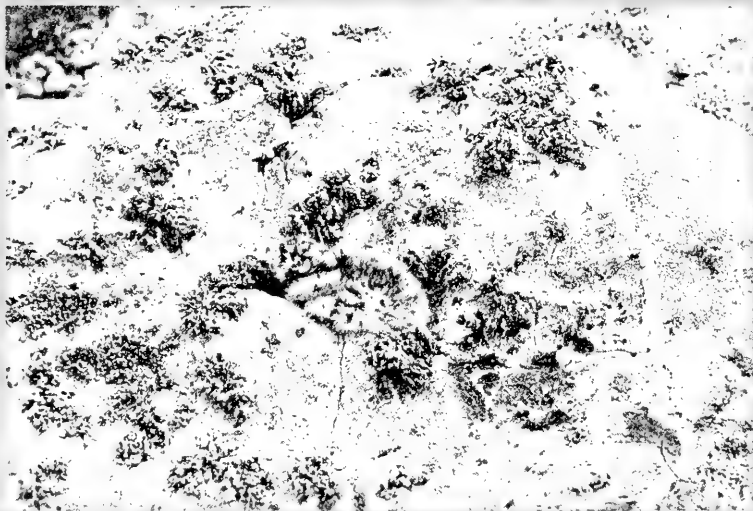


THE ARCTIC TERN.

The fish can easily be seen in the little bird's bill.



(a) Not in surroundings which protect it effectively.



THE ARCTIC TERN.

Plate 32.

(b) Admirably protected by the surroundings on which it has settled.



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